

NUTRITION IN BRITAIN IN

THE TWENTIETH CENTURY

David Frederick Smith

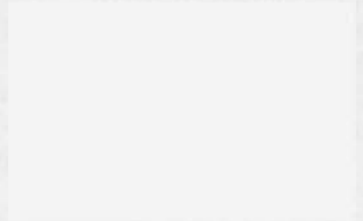
PhD., University of Edinburgh.

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Declaration

I hereby declare that this is the result of my own work, and that none of it has been included in any submission for any other degree or professional qualification.



Preface

I would like to express my sincere thanks to all those people whose encouragement and advice have helped me to complete this thesis. These include David Edge, Malcolm Nicolson and Steve Sturdy. In addition I would like to thank all those who provided valuable assistance in interview, in correspondence, or in access to private papers, and also the Librarians, Archivists, and Secretarial Staff of the institutions that I have visited. Finally I would like to thank my family, especially my wife and daughter for their support and patience.

ABSTRACT

The study is initially concerned with the origins and development of different approaches to nutrition science in Britain during the first three decades of the twentieth century. The contrasting approaches are shown to embody alternative "styles of thought" in the sense used by Karl Mannheim. An account of the work of the Advisory Committee on Nutrition of the Ministry of Health (founded 1931) is then given. The conflicts which occurred during the deliberations of the Committee are interpreted as conflicts between those who advanced the contrasting "styles of thought." The focus of attention then shifts to the foundation and development of the Nutrition Society (1941). The disputes which occurred in the Nutrition Society during its early years are shown to be largely concerned with alternative notions of the application of nutritional knowledge. Developments in the Society after the war, it is suggested, must be understood against the background of the post-war reaction against the "social relations of science movement". The foundation of the first Nutrition Degree in 1953 at the Nutrition Department at Queen Elizabeth College of the University of London, is then considered. A hypothesis is presented which suggests an explanation of certain important features of the professional ideology of nutrition which has been associated with the College.

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CHAPTER ONE: INTRODUCTION.

1.1. SUBJECT MATTER.

The scientific study of nutrition, and the application of the scientific knowledge of nutrition, is a very wide field. As an indicator of the width we can point to membership of the Nutrition Society, which includes people who would describe themselves as biochemists, physiologists, physicians, public health personnel, veterinarians, hospital dieticians, domestic scientists, agricultural scientists, food scientists, health educationalists, sociologists, statisticians and psychologists - as well as some who would admit to being animal or human nutritionists, or just nutritionists.(01) Others who are involved in the application of nutritional knowledge include civil servants and politicians, lay experts and the general public. The involvement of so many different interacting groups in nutrition makes it a potentially very fruitful field for sociological and historical investigation, but it also makes any study difficult to delimit. A comprehensive history of this field is far beyond the scope of a single thesis. The present thesis is therefore concerned only with certain aspects of the history of nutrition in Britain during the twentieth century. The story related here centres on three organisations which have been concerned with the study and application of nutrition, and their key scientific actors. The Advisory Committee on Nutrition of the Ministry of Health (founded 1931) is the focus of Chapter Three. The

Nutrition Society (founded 1941) is the focus of Chapter Four and part of Chapter Five, and "Nutrition" as advocated by the Nutrition Department of Queen Elizabeth College of London University, which offered the first BSc Degree in the subject (1953), is the focus of part of Chapter Five and Chapter Six.

The episodes making up the story of the Advisory Committee, which will be related in some detail, can only be understood on the basis of an understanding of the different approaches to nutrition to which the members subscribed, and so the "pre-history" (given in Chapter Two) will aim to provide this background. The origin of these different approaches will be sought in actors' differing disciplinary commitments, the alternative patterns of patronage, and the alternative means of deployment of knowledge, which they aimed to establish. Among the groups and institutions which could act as the patrons of nutrition scientists,(02) and as the consumers of their knowledge, the medical profession, as a relatively powerful group, was potentially very important: the relationship between the nutrition scientists and the medical profession, like the relationship between the nutrition scientists and the state, will be seen to be a recurring theme. The problems of patronage and deployment revealed in the accounts of the founding and development of the Advisory Committee, and of the Nutrition Society, will help to illuminate the problems facing those who sought to establish nutrition as a university subject after the war.

The need to provide some sort of solution to these problems will also explain the overall structure of the subject of nutrition advocated by Queen Elizabeth College during the last three decades.

1.2. STYLES OF THOUGHT

We may look to existing work in the history and sociology of science in order to develop a theoretical framework within which to organise the material with which the present study is concerned, and also to suggest some explanation of the events described. As a step towards an explanation of the events described in Chapters Two and Three the different "approaches to nutrition" which the early nutrition scientists advocated and employed will be shown to embody contrasting "styles of thought", in the sense used by Karl Mannheim.(03) The concept of "styles of thought" is of less value as an aid to understanding the events described in the later chapters. Nevertheless, the more general points which emerge from the following discussion of Mannheim's ideas and more recent work in the sociology of knowledge, will be taken as guidelines which inform the approach taken throughout this thesis.

Mannheim's use of the term "style of thought" is most clearly explained and illustrated in his essay on the history of conservative thought in Germany during the first half of the nineteenth century.(04) Here Mannheim explains that "style of thought" is similar to "habit of thought" in that "...it also starts with the assumption that individuals do not create patterns of thought in terms of

which they conceive the world, but take them over from their groups".(05) But "style", he says, is preferable to "habit" because if "thought developed simply through habit-making, the same pattern would be perpetuated for ever, and changes... would necessarily be rare."(06) He compares "style of thought" with the concept of "style" in the history of art, and suggests that once "styles of thought" are characterised, "...it should be just as possible to 'place' an anonymous piece of writing as an anonymous work of art".(07)

Use of the notion of "style of thought", Mannheim claims, can help the historian to avoid two common ahistorical assumptions:

One is that Thought is one, the same for all men, except for errors or deviations which are only of secondary importance. At the other extreme, there is the assumption... that the individual thinks independently and in isolation from his fellows. Thus the unique qualities of each individual's thought are overemphasized, and the significance of his social milieu for the nature of his thought is ignored...(08)

The concept of "style of thought", Mannheim says, can overcome these assumptions by providing an "intermediary level" of analysis between "the most abstract and most concrete". He explains that the aim of his essay is to

...look at the thinkers of a given period as representatives of different styles of thought. We want to describe their different ways of looking at things as if they were reflecting the changing outlook of their groups; and it is by this method we hope to show both the inner unity of a style of thought and the slight variations and modifications which the conceptual apparatus of the whole group must undergo as the group itself shifts its position in society.(09)

But in discussing connections between styles of thought and

social groups Mannheim goes beyond making correlations and speaking of changing styles "reflecting the changing outlook" of groups. He links a group's "style" to its "basic intention" which, he says

...expresses the idea that different ways of approach to the world are ultimately at the bottom of different ways of thinking. This basic drive determines the character of a style of thought.(10)

In addition, according to Mannheim the sociologist cannot assume that basic intentions

...have come "out of the blue". We must take it as axiomatic that they are themselves "in the making" so to speak, and that their history and fate is in many ways linked up with the fate of the groups which must be considered their social carriers.(11)

After these theoretical considerations Mannheim gives an account of the general social, political and intellectual developments in Germany and elsewhere in Europe during the eighteenth and nineteenth centuries,(12) and then proceeds to a discussion of the "Morphology of Conservative Thought". This he divides into discussion of the "basic intention" behind conservative thought in its "unconscious, unreflective form", and discussion of its "theoretical core... in its more developed form".(13) In the former discussion Mannheim identifies a number of "characteristic features" which, he says "somehow adumbrate" the basic intention. These features include conservative thought's

...emphasis on concreteness as against abstractness; its acceptance of enduring actuality, as compared with the progressive desire for change; the illusory simultaneity it imparts to historical happening as compared to

the liberal linear conception of historical development... its preference for organic social units rather than the agglomerative units such as 'classes' favoured by its opponents...(14)

But Mannheim states that his aim is to "look beyond the examples" at the

...basic intention itself, to follow up its unfolding, and finally to understand its functional importance in relation to the general social process.(15)

The features of conservative thought which he describes, and which, he says "adumbrate" the "basic intention" are symptoms of

...the conservatives experiencing the historical process in terms of relationships and situations which exist only as hangovers from the past...(16)

and he later concludes that

Our position... is that old ways of life and thought do not become superfluous and merely die off... On the contrary, in so far as these elements of the past are really alive and have a real social basis, they will always transform and adapt themselves to the new stage of social and mental development, and thus to keep alive a "strand" of social development which would otherwise become extinct.(17)

We may assume that the last part of this last sentence expresses Mannheim's view of the "basic intention" of undeveloped conservative thought. Mannheim then asks what is the "problem at the centre of conservative thought in its more developed form, an analysis of which will provide us with a clear view of its major methodological characteristics." (18) This "key problem", he explains, was opposition to the natural-law thought of the Enlightenment. In other words the "basic intention" of developed conservative thought is to oppose natural-law thought. He

then compares "natural-law" thought with conservative thought. He classifies the features of natural-law thought into "features of content and features of form, or methodology". The "contents" of natural law thought consist of four doctrines - the doctrines of the "state of nature", the "social contract", "popular sovereignty" and the "inalienable Rights of Man". He then mentions six "methodological characteristics" of natural law thought as follows:

- (i) Rationalism as a method of solving problems.
- (ii) Deductive procedure from one general principle to the particular cases.
- (iii) A claim of universal validity [his emphasis] for every individual.
- (iv) A claim to the universal applicability of all laws to all historical and social units.
- (v) Atomism and mechanism: collective units (the state, the law etc.), are constructed out of isolated individuals or factors.
- (vi) Static thinking (right reason conceived as self-sufficient, autonomous sphere unaffected by history). (19)

Mannheim then goes on to reveal how mature conservative thinkers questioned the ideas behind the four doctrines which made up the content of natural-law thought and how they attacked it methodologically as follows:

- (i) The conservatives replaced Reason with concepts such as History, Life, the Nation...
- (ii) To the deductive bent of the natural-law school, the conservative opposes the irrationality of reality....
- (iii) In answer to the liberal claim of universal validity for all, the conservative poses the problem of individuality [his emphasis] in radical fashion.
- (iv) The concept of the social organism [his emphasis] is developed to counter the liberal-bourgeois belief in the universal applicability of all political and social innovations... The emphasis on the qualitative which is so characteristic of conservative thought also arises from the same impulse.

(v) Against the construction of collective units from isolated individuals and factors, the conservative opposes a kind of thought which starts from a concept of a whole which is not the mere sum of its parts...

(vi) ...Instead of regarding the world as eternally changing in contrast to static Reason,... [the conservative] conceived of Reason and of its norms themselves as changing and moving.(20)

Mannheim presents his "stylistic analysis" then, as a means of classifying bodies of knowledge according to the methodological principles on which they are based - but also according to their content, and their associated "basic intention". He then goes on to a detailed discussion of how, during the late eighteenth and early nineteenth centuries in Germany, the natural-law thought of the French Enlightenment was adopted by the reforming bureaucracy, and conservative thought was developed in defence of the threatened aristocracy and their allies.(21)

Although Mannheim introduces some valuable ideas into the sociology of knowledge - notable among these being the use of "styles of thought" as a means of classifying bodies of knowledge - he fails to articulate a consistent theoretical framework. This is even apparent in an encyclopedia article published in 1931 which claims to offer a "systematic summary and prospectus of the new discipline of the Sociology of Knowledge."(22) Barry Barnes shows that despite frequent programmatic assertions of the fundamentally social nature of knowledge - a conception of knowledge as the product of social activity(23) - in practice Mannheim alternates between a social and a "contemplative view."(24) This may be seen in the rationale

offered for the doctrine of "Truth in History", according to which history throws up certain positions from which reality may be "viewed" - each of which contains a measure of truth but none of which is completely valid.(25) As Barnes points out, Mannheim later illustrated this with the metaphor of people viewing the same object from different sides - they are all viewing the same object, but each would give a different account of it.(26)

Rejection of contemplative accounts, and acceptance of the thoroughly social nature of knowledge, is, in an argument constructed by Barnes(1977), the first step to be taken towards a truly naturalistic approach to the sociology of knowledge.(27) But there are various features in Mannheim's thought which mitigate against this possibility; in particular he is constantly preoccupied with distancing his position from relativism, and also from positivism. The former pre-occupation leads Mannheim to lengthy discussions on epistemology (the notion of "Truth in History", and the later doctrine of "relationism" were products of this effort, and almost half of his 1931 encyclopedia article was concerned with epistemological matters)(28) and this, together with his pre-occupation with positivism, led to his neglect of empirical research.

These inter-related problems arise primarily from Mannheim's idealised view of scientific knowledge, which he excluded from his analysis(29). It was Mannheim's view that science could produce completely valid knowledge which was uninfluenced by the social situation in which it was

produced. But if the equivalence of science and other forms of knowledge from the point of view of sociology is admitted, then not only does a greater sympathy towards relativism become necessary, but Mannheim's anti-positivist emphasis on developing a sociology which is not modelled on the methods of natural science becomes unimportant.

Barnes's analysis

These questions have been boldly addressed by Barnes, who, in arguing for the sociological equivalence of scientific and other forms of knowledge, clears the ground for empirical studies divorced from epistemological concerns. Barnes's argument is based on an analysis of knowledge as a cultural resource, and of the generation and sustenance of knowledge in terms of interests:

...interests inspire the construction of knowledge out of available cultural resources in ways which are specific to particular times and situations and their overall social and cultural contexts...(30)

This interest-inspired construction of knowledge always involves "socially sustained consensus and a modification of existing meanings".(31)

Barnes primarily associates knowledge with inter-related interests in "prediction manipulation and control" and "rationalisation and persuasion".(32) In Barnes's preferred means of social explanation of knowledge, interests must be seen as somehow arising from social structure, and also guiding the activity through which knowledge is produced. "Activity" - the active

construction of knowledge from existing cultural resources - includes not only thought, but also, for example, design and conduct of experiments, the writing of scientific papers, and participation in professional, social and political organisations.

Barnes advocates the sociological equivalence of all forms of knowledge, placing epistemological questions on one side.(33) Having done this, he says that while we

...will doubtless continue to evaluate beliefs differentially ourselves... such evaluations must be recognized as having no relevance to the task of sociological explanation; as a methodological principle we must not allow our evaluation of beliefs to determine what form of sociological account we put forward to explain them.(34)

Barnes indicates that the relationship between interests and social structure is likely to be "exceedingly complex", and suggests that it is unlikely that it can be adequately dealt with by "simple, rigid accounts".(35) But he illustrates how such connections may be made by reference to concrete research;(36) he suggests that it will be through further concrete research that these relationships will be best illuminated.(37)

In the following section we will review several recent uses of Mannheim's concept of "styles of thought" in the sociology of science, in order to see how use of the concept can facilitate the empirically grounded work which Barnes advocates.

1.3. EXAMPLES OF USES OF "STYLES OF THOUGHT".

Mannheim's essay on conservative thought was intended as an illustration of the theoretical approach which he had

previously advocated.(38) It might have been expected that other writers would identify different styles of thought in different countries and during different epochs. However, the conservative and natural-law styles of thought have been accorded, by several authors, a far more general significance. Analysis in terms of "styles of thought", has usually been a means of classifying bodies of knowledge according to their methodological characteristics. Parallels between the methodological characteristics of natural-law and conservative thought as laid out by Mannheim, and the bodies of knowledge in question, are generally regarded as sufficient to label them "natural-law" or "conservative" in style. Often, any comparison of the "content" of the bodies of knowledge in question and Mannheim's styles is ignored; similarly with "basic intentions". Essentially, the predominant interpretation of Mannheim's work states that, in the realm of social thought, natural-law thinkers tend to approach problems by formulating general principles which they then apply to all situations, while conservative thinkers tend to emphasise the complexity of problems and rely on traditional institutions in their chosen solutions. In science, natural-law thinkers are likely to take reductionistic approaches, while conservative thinkers are likely to take holistic approaches.

Mannheim warned against regarding styles of thought as "eternal characteristics"(39), but also pointed out that a style of thought "embraces more than one field of human

self-expression; it embraces not only politics but art, literature, philosophy, history, and so on".(40) Bloor, who has made use of Mannheim's work in his theoretical arguments in the philosophy and sociology of science, echoes this remark when he declares that there have been debates during the last two hundred years in "...the realms of political, social, economic, ethical and legal theory" which can all be characterised as clashes between "Enlightenment and Romantic ideologies".(41) He illustrates the dichotomy of thought in all these fields, and also characterises the debate between Popper and Kuhn in these terms. This was a part of his argument against epistemology, and in favour of the "strong programme" in the sociology of science.(42)

However, uses of Mannheim which are of more relevance here are those in which his ideas suggest explanations in the history of science. Some historians have been content simply to point out the resemblance between their own material and Mannheim's categories (the emphasis usually being on methodological features), while others have attempted to identify the social forces which lay behind the styles of thought that they identify. One example of a historical application of Mannheim's dichotomy is that proposed by K.L.Caneva in his paper on the development of the study of electricity in Germany during the eighteenth and nineteenth centuries.(43) Caneva characterises the approach taken to physics during the earlier period when Germany was a "traditional society" as "concretizing

science" which, he says, embodied a conservative style of thought. The later approach taken to physics, when Germany had become a "progressive society" he characterises as "abstracting science" which, he says, embodied a "progressive" (natural-law) style. He characterises a traditional society as a state in which "...the existing state of affairs is... the source of one's social principles", while in a progressive society, "society is conceived... as the result of antecedently chosen principles." He goes on:

This reversal in the relationship between the concrete (experience) and the abstract (principles) parallels the change in methodology from the empiricism of concretizing science to the hypothetico-deductivism of abstracting science. Whereas empiricism regards experiments as preceeding theory, the hypothetico-deductive method has experiment follow theory.(44)

Caneva's work is an example of the kind of work in which the comparison with Mannheim's "styles of thought" is made without attempting any detailed sociological explanation: but, nevertheless, Caneva claims that

At the very least, the present study provides a concrete example of how the sociology of knowledge can enable the historian to achieve a meaningful synthesis of internalist and externalist approaches to history of science.(45)

But the applicability of Mannheim's dichotomy to Caneva's work is enhanced by the fact that it was concerned with the development of a field of science in the same country, and over a similar period, as the writings discussed in Mannheim's essay on conservative thought.

Another application of "styles of thought" to the history of science is MacKenzie's work on the early

twentieth century Biometrican/Mendelian controversy.(46) The dispute between the two camps concerned a whole range of issues, but a central difference was that the biometricians, of whom Karl Pearson was the foremost protagonist, believed that evolution was caused by the selection of small "continuous" differences, while the Mendelians held that unpredictable changes occur, are passed on without blending, and produce "discontinuous" variation. The Mendelians were grouped around William Bateson, and the historian William Coleman had already characterised Bateson as a "conservative" on the basis of his methodological approach.(47) MacKenzie points out that Mendelianism as commonly conceived is, in fact, an archetypal reductionistic approach to biology; but, against this, he considers Bateson's reluctance to accept the chromosome theory to be evidence of his romantic-conservative style of thought. MacKenzie points out:

As against this literal atomism, [of the chromosome theory] Bateson developed an alternative metaphor that, while still mechanical, emphasised holistic ordering rather than "billiard ball" materialism. Animals and plants are not matter, wrote Bateson, they are "systems through which matter is continuously passing."(48)

On this view, according to Bateson,

The cell... is a vortex of chemical and molecular change... We must press for an answer to this question, How does the vortex spontaneously divide? The study of these vortices is biology, and the place at which we must look for our answer is cell division.(49)

Coleman suggested that the source of Bateson's alternative

metaphor was the ethereal, non-material vortex atom of the Cambridge physicists, and MacKenzie adds that Brian Wynne has characterised these physicists as romantic-conservatives.(50)

MacKenzie points out that Coleman's characterisation of Bateson as a "conservative thinker" was non-sociological, as Coleman fails to discuss how Bateson's style of thought was sustained socially.(51) MacKenzie attempts to tackle this latter task himself. MacKenzie argues that the differences between the Mendelians and biometricians cannot be analysed in terms of esoteric training alone, and instead seeks "external" factors.(52) In his description of romantic-conservatism (he uses this expression, he explains in order to make clear that he is not referring to the Conservative Party), he emphasises, first of all, not that it is a particular conglomeration of methods of thought, but that it is "an oppositional stance... a critique of bourgeois society... from the point of view of an idealised past."(53) It is this expression of what Mannheim might have called the "basic intention" of conservative thought, which MacKenzie uses to call attention to the probable source of Bateson's conservatism. But MacKenzie goes beyond this abstract formulation in order to explore the particular sense in which Bateson was opposed to bourgeois society. He points out that it would be untenable to argue that Bateson's conservatism was an expression of the situation of a threatened aristocracy (in the same way that the conservatism described by Mannheim

was linked to the German aristocracy), but instead suggests a link with Bateson's concern for maintaining the "...integrity and elite, anti-utilitarian ethos" of Cambridge University.(54) Bateson had not been highly successful in his Cambridge career, but he was prominent in campaigns aimed at maintaining traditional "Cambridge values". The Mendelian view that the progress of evolution depended upon sudden unexpected changes in species bolstered the anti-utilitarian argument that social progress depended upon the rare genius.

As for the Biometricians, whom MacKenzie might have characterised as "natural-law" thinkers, MacKenzie argues that their style of thought was sustained by their connections with the eugenics movement, which in turn, he argues, sought to further the interests of the rising professional middle class.(55)

MacKenzie clearly regards opposition to bourgeois society as constitutive of conservative thought, but having classed Bateson as a conservative, he moves quickly to consideration of the particular interests which this "basic intention" aims to serve.

Wynne, in the closing section of his thesis, draws attention to the problems which may be encountered in an ahistorical classification of styles of thought. He uses the notion of "conservative thought" to characterise certain currents in British physics during the early twentieth century.(56) Wynne notes that, while he has characterised British physicists who were opposed to

quantum theory as conservatives, in Forman's study of physics in Weimar Germany, conservative thought was associated with the espousal of quantum theory.(57) Wynne explains this by noting firstly that the conservative and natural-law styles of thought are "ideal types", and that normally they will not be found in "pure form". Mannheim made a similar point when he acknowledged that all the methodological features by which he had characterised conservative and natural-law thought were not likely to be identified in the thought of one actor.(58) Wynne notes that while the elements of each style "...may have some kind of natural group-affinity... different elements may be selected for emphasis by different groups in different social situations."(59) Thus, for the German scientists, support of the quantum theory was a conservative reaction against "causality and determinism", in common with wider trends in German Society at that time. For Wynne's British physicists, the rejection of quantum theory was a conservative rejection of fragmentation of science and of society, and the assertion instead of unifying concepts such as the "ether". We might say that the thought of the British and German physicists, as well as emphasising different features of conservative thought, was also underpinned by different "basic intentions," explicable in terms of differing interests and activities.

Wynne concludes that the comparison between his own and Forman's analysis suggests that

...the Conservative-Enlightenment styles of thought antithesis should be used very cautiously

and with a willingness to disaggregate and discriminate between different emphases upon the component antitheses involved in the overall styles. It may be that the elasticity of interpretation and flexibility of ideological exploitation of such styles in different social situations is so great as to render them of little value as sociological tools. On the other hand, the frequency with which the typology seems to fit a wide variety of historical contexts of scientific thought, and the correspondence often across disciplinary boundaries, suggests that the styles of thought represent the fundamental sets of ideological and conceptual resources which can be drawn upon in the formulation of distinct belief systems. Certainly they are in any case only classificatory devices and not explanatory agents in themselves.(60)

The problem which Wynne raises here is similar to the question alluded to at the start of this section(61) - namely, is Mannheim's work most appropriately extended by developing new typologies for characterising styles of thought at different times and in different contexts to those that he considered, or is the particular dichotomy which he identified of such widespread significance that it is more appropriate to attempt to classify newly-encountered bodies of knowledge in the same terms? In advocating the need to "disaggregate and discriminate between... the component antitheses", it would appear that Wynne regards the former option as a possibility. However, he then re-asserts the utility of the natural-law/conservative dichotomy in terms of its empirical value.

As Mannheim put it, the value of the concept of "styles of thought" is, that it provides an "intermediary level" of analysis,(62) and as Wynne pointed out this level of analysis, using the conservative/natural law dichotomy,

allows comparisons across disciplines. It provides a level of analysis which, if used in the "future studies" referred to in the following quotation from the closing paragraphs of MacKenzie's thesis, can facilitate comparisons upon which large scale theory of the development of British science can be based. MacKenzie suggests that during the period with which he was concerned (the Victorian and Edwardian eras)

...it is useful to see at least two distinct constellations of interests as manifested in the thought of the British intelligentsia... One was grounded in the situation of those personal occupations which were growing in importance with modernisation; it found expression in technocratic ideologies such as Fabianism and eugenics. The other was grounded in the situation of those disparate members of the old elite (such as downwardly mobile offspring) to whom modernisation posed a threat; this constellation found expression in various forms of conservatism, but not in scientific ideologies such as eugenics. This remains only a conjecture. Given such factors as the contingency of individual biographies and the crosscutting effects of some occupational affiliations, I would not expect straightforward patterns to emerge from future studies. Nonetheless, I would advocate its use as a hypothesis that, though perhaps in a modified form, may eventually throw light on some aspects of the history of science, and of intellectual life in general, in this period.(63)

In this thesis the conservative/natural-law dichotomy will be used to characterise the knowledge of the early twentieth century nutrition scientists, and to draw attention to parallels, which it will be suggested, broadly support Mackenzie's hypothesis. In view of the weaknesses in Mannheim's approach to science which have been discussed, I will aim to follow the guidelines advocated by Barnes - that is to view knowledge as a resource, and to

concentrate on actors' interests and activity and the social context. It might be objected, however, that much of this thesis is not greatly concerned with the construction of knowledge, the subject of Barnes's analysis. The focus of Chapter Three is, for example, a committee which was mainly concerned with the application of knowledge rather than knowledge production. However, Barnes's analysis of the construction of knowledge from existing knowledge tends to blur any distinction between knowledge production and utilisation, and his general guidelines may be taken to apply to the kind of material presented here. Finally, in Chapter Six, the formulation of "Nutrition" as a university subject after the Second World War will be considered, and here Barnes's guidelines can be taken to apply more directly. At this point the evidence available is such that the problems of the imputation of interests require special consideration, but that discussion will be left to Chapter Six.

1.4. EXISTING HISTORICAL STUDIES RELATED TO THE SUBJECT MATTER OF THE THESIS.

There are many historical studies which bear upon the substantive topic of this thesis, but it will not be necessary to mention them all and most will, in any case, be referred to only in footnotes. I will discuss only the most pertinent of the several kinds of studies which provide background information to, and which will be supplemented by, the current work. At this point I will not attempt to summarize previous studies or to consider in

detail how they are related to this thesis. The aim is rather to "place" the current work by comparing the kinds of issues with which the previous studies were concerned with those which are of importance here. Firstly, there are studies of the history of the biomedical disciplines of physiology and biochemistry, to which nutrition is most closely related. Secondly, because nutrition became a highly political question during the 1930s, studies of the radicalisation of scientists during this period and the subsequent fate of the radical movement, are relevant. Thirdly, there are studies which are concerned with various aspects of nutrition itself - with theoretical and institutional developments, and the application of nutritional knowledge.

History of Biomedical Disciplines

The key texts in the history of physiology which are pertinent to the present study are those of Gerald Geison.⁽⁶⁴⁾ Geison focuses on an earlier period in the development of British physiology, but provides some insights which, while marginal to his own work, crucially facilitate an understanding of the institutional landscape in which the actors of our early chapters operated. However Geison's history is fundamentally institutional history; his interest is mainly in identifying the factors which led to the relative success of one school of physiology, and the relative failure of another. In doing so Geison identifies features which help us to understand the position of our actors - particularly with respect to the

medical education and practice - but, unlike Geison, we will also use such features to shed light on the social roots of different approaches to, and controversy in, biomedical science.

The work of Robert Kohler on the history of biochemistry is of value for similar reasons. He deals in detail with the position of Frederick Gowland Hopkins, (65) the "father of British Biochemistry", who was also credited with the discovery of vitamins, (66) and who is prominent in our early narrative. Kohler considers not only the institutional location of biochemistry, but also its theoretical basis, and the theoretical tasks which Hopkins undertook with regard to existing chemical studies in medicine and biology. Kohler's focus on Hopkins's continual argument against the notion of living "protoplasm" molecules, provides the starting point for our analysis of alternative approaches to nutrition. (67)

The Radicalisation of Scientists

The major work on the radical movement in science during the 1930s is that of Paul Gary Werskey. (68) Werskey discusses the "social relations of science movement" in terms of divisions into "Reformist" and "Radical" factions, and "insider" and "outsider" modes of operation. The emergence of the Advisory Committee on Nutrition may be regarded as part of the story of the operation of "insiders": but I will show that, in concrete analysis, explanations in terms of interactions between politically "radical" and "reformist" scientists are inadequate - here

interaction between these two groups on the one hand, and political conservatives on the other hand, is of equal or greater importance.

But the general context and pattern of developments in nutrition is much as Werskey describes. He notes that there was, during the later 1930s, a "united front" of reformists and radicals, a war-time assimilation of the radicals, but a rapid renewal of tensions between them and the reformists, which led eventually to post-war reaction. Such features can all be found in the story of nutrition, but, as may be expected when broad-brush explanations are applied to concrete situations, there is a blurring of distinctions. Werskey's interest was mainly in scientists as political actors - and in the fate of the "social relations of science" movement, and its reformist and radical components. Here we are more interested in the influence of the "nutritional wing" of the radical movement on the development of the institutions on which we will concentrate, and also its influence on the post-war formulation of "nutrition" as a body of knowledge.

A further important study in this area is Kay MacLeod's detailed account of the history of the Association of Scientific Workers,(69) which is in broad agreement with Werskey's outline. Thus the Association, while unsuccessfully attempting to fulfil the role of a "professional representative body" during the early 1930s, was successfully transformed into a political pressure group after 1934 - during the period of the "united front".

MacLeod's work is also useful in providing information about the political activities of several of our central actors.

Historical Studies of Nutrition

Turning now to work which is more directly related to the current topic, there are a number of important studies. Of relevance to the earlier history is a paper by A. J. Ihde and S. L. Becker on "Conflict of Concepts in Early Vitamin Studies", in which an attempt is made to identify the conceptual factors which "delayed" the formulation and acceptance of the trace nutrient (and vitamin) concepts.(70) The general claim is that scientists were unable to explain the phenomena that they observed in terms of trace nutrient deficiency because of the obscuring effects of "attractive", "successful" and "popular" alternative concepts. Several of these concepts appear in controversies with which we will be concerned, but here they will be viewed as resources deployed by specific actors for definite reasons - the analysis will be less abstract.

Not totally unrelated to Ihde and Becker's work (although the author does not make the connection) is a paper by Celia Petty on "The Medical Research Council's Interwar Dietary Surveys".(71) The link is that the group of scientists who were responsible for the dietary surveys that Petty discusses are those who were foremost in the opposition to what was, in Britain, the most crucial test of the value of the vitamin concept - the vitamin theory of

rickets. Petty recognizes the contrast between the view of nutrition associated with the surveys and that associated with the vitamin concept, as is evident from her explanation of her argument:

...alongside... [the] prestigious work on vitamins... was... work on the "quantitative aspects of nutrition". Although this research was far less spectacular than work on the vitamins, it is the argument of this paper that the MRC's quantitative dietary studies... have had an enduring impact on the lives of the poor in the United Kingdom, which far outshadows that of the discovery of the vitamins.(72)

Petty means by this that the "physiological definition of the minimum requirements" adopted by the dietary studies was accepted by the Unemployment Assistance Board,(73) Beveridge,(74) and "in the setting of contemporary Supplementary Benefit levels", and she aims in her paper to "document the origins of the scientific argument which was used to justify minimum requirement levels, and... to demonstrate the prejudice, inaccuracy and analytical fallacies which lay behind this view."(75)

In a similar vein is a paper by Charles Webster entitled "Healthy or Hungry Thirties?".(76) He asks "Were the '30s characterised by severe social deprivation, or was this myth assiduously cultivated by a mischievous minority for the sake of political advantage?"(77) He discusses the official and unofficial health statistics, including those concerned with state of nutrition, and concludes that "the great statistical exercises contained in the official reports are not worthy of the degree of reliance traditionally placed on them."(78) Compared with the

current study, the papers of Petty and Webster belong to a different tradition of historical analysis, for I will not be concerned to assess the scientific validity of actors' judgements. Petty and Webster do however provide some valuable insights into the workings of two of the institutions which are of central importance here - the Medical Research Council and the Ministry of Health.

The work which, while very much a preliminary analysis, attempts to use an approach to the history of nutrition science which is similar to that adopted here, is an MSc thesis by D.J.Shardlow entitled Nutrition and Social Reform.⁽⁷⁹⁾ Shardlow's approach is similar to that taken in this thesis because he bases his interpretation of events on the interaction between professional groups and wider political changes. However, Shardlow's work suffers greatly from its almost total reliance on published material. Briefly, his view is that "social nutrition" became differentiated from "human nutrition" during the 1920s, and that the significance of the knowledge of the "social nutritionists" for political debate during the 1930s enabled them to win a place in the machinery of the state. This, Shardlow suggests, was official recognition that the "social nutritionists" had a unique contribution to make, and solved the problem of their rivalry with the Medical Officers of Health. I will argue, on the basis of a much more detailed historical analysis, that the situation during the 1920s is better interpreted not in terms of Shardlow's "social nutrition" becoming differentiated

from "human nutrition", but rather in terms of the co-existence of alternative approaches to nutrition each associated explicitly or implicitly with a particular social programme, and each sustained by particular social interests. The events of the 1930s can then be better explained in terms of interaction between these alternative approaches and changes in the social context. While Shardlow's view of the 1930s as a period when "social nutritionists" made a "push" and obtained a greater role in government does not stand up to a more detailed scrutiny of the historical situation, he nevertheless identifies some of the important issues which were at stake - notably the controversy over means of determining nutritional status, one view in which he identified with the practice of Medical Officers of Health.(80)

Finally, in this review of previous work, I must mention a paper which was published in 1978 on "The History of the Nutrition Society", by Alice Copping, who was a member of the Society since it was formed in 1941.(81) Miss Copping's paper is remarkable for the fact that it only contains the faintest of allusions to the disputes which led to the foundation, and permeated the early development, of the Society. This is, of course, as might be expected; the paper, published in the Proceedings of the Nutrition Society aimed to give members a sense of the great achievements, not of the quarrelsome discussions, of the past. The present study will help to correct this hagiographic history. In so doing, it is hoped that it

might make a more useful contribution to discussions about the contemporary contribution of the Society at Nutrition Society Committee meetings and at Symposia than does Copping's work.(82)

The Contribution of this Thesis

The previous remarks bring me to the potential value of my own work - in which disputes about the possible directions of institutionalisation of nutrition are highly important. Webster and Petty were clear about the contemporary value of their work,(83) and although I am not, like them, concerned with judging the scientific validity of actors' knowledge, I will be quite clear about the potential contribution of this thesis. The history of nutrition as presented here, by revealing the alternative means of practice of "nutrition" in the past, and by facilitating an understanding of the development of current practices, can help to inform contemporary debate about the state of the field. The debate arises, as in the past, from the acute anxiety often felt by nutrition scientists concerning the gap between current knowledge and the nutritional condition of the populations of both developed and underdeveloped countries. The passing years seem to produce no closing of the gap. It is with the hope of helping nutrition scientists to reconsider and make more effective their role in society that I venture to overturn idealised versions of the past.

1.5. SOURCES

For the historian of science the foundation of

specialized scientific societies is generally an important stage in the development of new areas of scientific activity. This is because, in the process of formation of such institutions, practitioners formulate their objectives and negotiate the relationship between new and existing forms. The foundation of a scientific society may involve the confluence of groups with formerly diverse interests, or it may represent an attempt by one group to impose its will on others. For these reasons it was felt that a fruitful starting point for empirical research in the history of nutrition would be a study of the foundation and early development of the Nutrition Society. Awareness of the questions at stake in the founding and development of the Nutrition Society could then guide research into the earlier period, while the resolution of these problems, or the reasons for their displacement by others, could guide research into the later period.

The research undertaken initially involved study of the Nutrition Society's archives. These consist of the minutes of committee and some sub-committee meetings, and some correspondence files of the early officers. The archives had recently received a great deal of attention from the Society's archivist (Miss Copping) which had resulted, for example, in the minutes of the main committee meetings being collected and ordered in bound volumes. This certainly facilitated my task in many ways but, apparently, the archivist also disposed of a great deal of material.(84) Much of this material was probably of little

value, but the archivist is a long-standing member, and (judging from her own account of the history of the Society) may have disposed of some material which would have been useful to the sociologically informed historian.

This work at the office of the Nutrition Society was followed by a series of interviews, with some members and former members of the Society.(85) Two important points became apparent during this stage of the work. Firstly, it soon became obvious that the founding and development of the the Nutrition Society could only be understood in the light of a better account of events of the previous decade than was currently available; and, secondly, it also became apparent that the subject of nutrition, as defined by the activities of the Nutrition Society, was exceedingly diffuse. Following up the first point resulted in the consultation of several further archives which will be mentioned later. The second problem - the problem of focus - may be illustrated by the fact that the interviewees' definitions of "nutrition" were very variable.(86) A clearly formulated definition of "nutrition" was given by those who had been associated with Queen Elizabeth College and so it was therefore decided that, by way of limiting the scope of the thesis, the founding and early progress of the Nutrition Department of Queen Elizabeth College would be taken as the eventual focus of the account of developments after the Second World War. It was hoped that the insights gained from the earlier chapters would help to illuminate how this definition of "nutrition" was arrived

at.

The debates within the Nutrition Society during the early years of its existence were related, to a large extent, to the question of how and whether the Society should participate in the application of scientific nutritional knowledge. It was therefore thought that the background to these debates would best be provided by study of the official organisation of nutrition scientists - the Advisory Committee on Nutrition of the Ministry of Health - which had wrestled with this problem during the previous decade. This entailed consulting the archives of the Ministry of Health at the Public Records Office at Kew. It soon became apparent that the issues which divided the Advisory Committee dated back to an earlier period still - to the time of the development of the the vitamin concept, and, in particular, to the controversy concerning the aetiology of rickets from 1918 to 1923. The rickets controversy was therefore studied, initially using published sources, and later using the archives of the Medical Research Council. The last mentioned archives also provided much of the material upon which a hypothesis relating the rickets controversy to alternative approaches to biomedical science, and to alternative means of relating to the medical profession, is based.

Only the main archival sources and stages of the research have been mentioned here. Other sources are mentioned in Appendix 1.(87)

1.6. OUTLINE OF SUBSEQUENT CHAPTERS.

As I have already indicated, in the following chapters I will present a detailed account of some specific developments, and will suggest some explanatory hypotheses. In Chapter Two I will explore the different approaches which were taken to nutrition during the earlier decades of the twentieth century, and I will introduce most of the key actors in the story related in Chapter Three. I will argue that these different approaches embody the conservative and natural-law styles, and in my hypothesis regarding the social sustenance of these styles I will emphasise the alternative means by which their advocates were able to relate to the medical profession.

Chapter Three is centred on an account of the activities of the Advisory Committee on Nutrition of the Ministry of Health. It is shown how the various differences of opinion among the members of the committee may be seen as rooted in the conservative/natural-law dichotomy in the approaches to nutrition outlined in the previous chapter.

Chapter Four is mainly concerned with the foundation and wartime activities of the Nutrition Society. It will be argued that the foundation of the Nutrition Society represented an attempt by some of the senior workers in the field to control and direct the "nutrition movement" which had emerged during the 1930s. I will also show how political divisions of the earlier decade continued into wartime and were manifested in debates concerning the appropriate means of operation of the Nutrition Society.

Chapter Five will be concerned with the post war Nutrition Society, and the foundation and development of the first university nutrition department. This account of the Society, and interview data with its members, will help to illuminate the circumstances in which "Nutrition" as a new university subject was formulated.

In Chapter Six initially I will return to the discussion of the sociology of science. I will discuss, in particular, the problem of the imputation of interests, and the question of the sociological interpretation of data relating to individuals. In the light of this discussion, the insights gained from the previous chapters will then be employed in an explanation of the way in which "Nutrition" was formulated and of the general thrust of the research programme (and other activities) which developed at Queen Elizabeth College.

CHAPTER TWO: STYLES OF THOUGHT IN NUTRITION.

2.1.INTRODUCTION.

In Chapter Two I will identify two groups of scientists, one based in Glasgow (D.N.Paton, L.Findlay and E.P.Cathcart)(01) the other associated with Cambridge (F.G.Hopkins and E.Mellanby).(02) I will show that there existed a dichotomy between both the scientific and the social thought of these groups, and I will compare the state of development and institutional connections of their respective enterprises.

I will propose that the Glaswegians were essentially conservative thinkers in the sense discussed in Chapter One, who were engaged in defending a traditional holistic approach to their science. Cathcart became the main defender of an approach to the study of nutrition that the English workers regarded as superseded. In their thought concerning the social causes of, and solutions to, health problems, the Glaswegians may also be regarded as essentially conservative, and I will show that despite certain differences they all emphasised the complexity of problems, and the importance of the family.

The English workers, in contrast, were essentially natural-law thinkers and engaged in establishing new reductionistic approaches to medical science. Hopkins, who was credited with the discovery of vitamins, was engaged in the conceptual and institutional development of the new discipline of "dynamic biochemistry" or "general biochemistry".(03) Mellanby was the main proponent of the

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vitamin theory of rickets, in a controversy about the cause of rickets in which he was supported by Hopkins and opposed by Paton and Findlay. Mellanby's major interest became the development of a new approach to nutrition which emphasised, above all, the vitamin content of the diet, and other factors only in as much as they affected the vitamins. When Mellanby and Hopkins ventured to express opinions concerning the social causes of health problems and their solutions, they adopted, as in their scientific work, reductionistic approaches.

Mellanby and Hopkins, like Paton and Findlay, were greatly and publicly concerned with the relationship between their work and medicine. Findlay and Paton consistently emphasised the role of clinicians in medical research, while Hopkins emphasised the role of the laboratory. Like Hopkins, Mellanby defended the role of the laboratory worker, but he also attempted to compete with the clinically-orientated on their own ground.

I shall begin my exposition with short biographical sketches introducing Hopkins, Mellanby, Paton, Findlay and Cathcart. I shall then compare the conceptual and institutional basis of their work, against the background of long term trends in Scottish and English physiology. An account of the rickets controversy will illustrate the concern of Paton, Findlay, Hopkins and Mellanby with the relationship between their work and medicine. Finally I shall draw out the differences in the approaches that our actors took to the study, and to the social dimensions of

nutrition, eventually focussing on Cathcart and Mellanby, and the origins of their respective styles of thought.

2.2. HOPKINS, MELLANBY, PATON, FINDLAY AND CATHCART.

After three years' training with a consulting chemist, and several short-term jobs and courses, Hopkins became assistant to the Medical Jurist at Guy's Hospital.(04) He spent five years in this position, mostly conducting analyses to detect poisons, during which he acquired an external London BSc degree. In 1888 Hopkins enrolled at Guy's Hospital Medical School and was also awarded a research studentship. In 1894 he became Demonstrator in Practical Physiology at the school, and in 1898, aged 36, accepted an invitation from Michael Foster(05) to go to Cambridge to develop research and teaching in Chemical Physiology. In 1902 he became University Reader in Biochemistry, and in 1906 Science Tutor and Fellow of Emanuel College.(06) In 1910, after being nominated by his colleague Walter Fletcher,(07) Hopkins was elected to a Fellowship and Praelectorship in Biochemistry at Trinity College. This improved his personal financial position but his research facilities continued to be makeshift. In 1914, however, at the age of 53, Hopkins became first University Professor of Biochemistry,(08) and in 1925 an Institute of Biochemistry was opened in Cambridge which he directed until he retired in 1943.(09)

Mellanby entered Emanuel College in 1902, when Hopkins was Medical Tutor there. After taking his BA in 1905 he conducted research with Hopkins for two years,

before leaving Cambridge to complete his medical qualifications. Most of his clinical appointments were carried out at the Western Infirmary of Glasgow University.(10) In 1909 he became Demonstrator, and in 1910 Beit Fellow in Physiology at St Thomas's Hospital, London. In 1913 he went to King's College for Women in Kensington (later named Kings College of Household and Social Science),(11) as first lecturer in Physiology. At around this time Mellanby gave up his Demonstratorship at St Thomas's but took up a similar appointment at the London Hospital which he preferred because it provided laboratory facilities and assistance.(12) In January 1920 the Senate of London University elected Mellanby to a Professorship but soon afterwards he was appointed Professor of Pharmacology at Sheffield University, and Honorary Physician to Sheffield Royal Infirmary. In 1933 he was appointed Secretary of the Medical Research Council.(13)

Paton, like the other members of the Glasgow group, had (in comparison with Hopkins) a conventional and uninterrupted career. He acquired a BSc in Edinburgh at 22, and his MB and ChB a year later. Following a short period on the continent,(14) Paton held a succession of posts in Edinburgh - a house appointment at the Royal Infirmary, a fellowship at the University, a lectureship at Surgeons' Hall, and the Superintendentship of the Laboratory of the Royal College of Physicians. In 1906 Paton became Regius Professor of Physiology at Glasgow, and continued in this position until he died on the day that he retired in

1928.(15)

Findlay graduated from Glasgow University in 1900 and was awarded his MD four years later for work in pathology. In 1908, at the time of the publication of his first paper on rickets, he was assistant to the Professor of Pathology and Clinical Tutor with the Professor of Clinical Medicine, and he also held junior posts at the Western Infirmary and the Royal Hospital for Sick Children. In 1914 he became Physician to the Royal Hospital for Sick Children and immediately after the war spent a year as Director of Child Welfare to the League of Nations in Geneva. In 1919 Findlay became lecturer in Diseases of Childhood at Glasgow University and in 1924 first Professor of Medical Paediatrics. He resigned his chair in 1930 and left Glasgow to become Physician to the Queen Elizabeth Hospital in London where he also ran a private practice.(16)

Cathcart graduated (MB ChB) from Glasgow University in 1900, and after a year in hospital posts went to Munich, where he attended lectures by Voit,(17) and to Berlin, where he studied Chemical Pathology. He worked at the Lister Institute from 1902 to 1905, and then returned to Glasgow to a lectureship in Physiological Chemistry. In 1908 Cathcart spent five months with Pavlov in St Petersburg,(18) and he spent 1912 in Boston, working on energy metabolism with F.G.Benedict.(19) In 1915 he became Professor of Physiology at the London Hospital Medical School, and in 1919 Professor of Physiological Chemistry at Glasgow, a post which he held until he succeeded Paton in

2.3. ENGLISH AND SCOTTISH PHYSIOLOGY.

Geison has referred to long-term trends in the development of Scottish and English biomedical science, which will be seen to form an important component of the context of the interaction between our actors. He notes that during the first seven or so decades of the nineteenth century, while Scottish physiology, led by the Edinburgh school flourished, physiology in England stagnated.(21) From about 1870 onwards, however, while English physiology enjoyed a renaissance, it appears to have been the turn of Scottish physiology to stagnate. When Schafer(22) was elected to the Edinburgh chair of Physiology in 1898 (an appointment that was contested by Paton(23)), a colleague wrote to him

...it will be quite a novelty to see some scientific work coming from Edinburgh.(24)

The activities of the Physiological Society provide another indicator of the status of Scottish Physiology. The Society, founded in 1875, failed to meet in Scotland until 1890, when a meeting was held in Edinburgh, but an invitation made jointly by William Rutherford, Schafer's predecessor,(25) and Paton, for a second meeting, was refused. Meetings in Edinburgh were more regular after Schafer was appointed, and took place in 1906, 1911, 1919, and 1925. The first meeting in Glasgow took place in 1909, after Paton was appointed Regius Professor of Physiology, but the second was not held until 1923, as a joint meeting

with the British Association.(26)

As Scottish physiology stagnated, a leading centre of the English physiological renaissance was the Cambridge school of Michael Foster.(27) The development of biochemistry at Cambridge, in which Hopkins played a key role, may be seen as a further stage of the English renaissance. The most important point of comparison for the story related here, is that Hopkins's biochemistry posed a direct challenge to the scientific theory and practice of Paton and Cathcart.

2.4. HOPKINS AND BIOCHEMISTRY; PATON, CATHCART AND CHEMICAL PHYSIOLOGY.

In a 1913 Address to the British Association, Hopkins explained the content of biochemistry. His main thesis, he said was that

...in the study of the intermediate processes of metabolism, we have to deal, not with complex substances which elude ordinary methods, but with simple chemical substances undergoing comprehensible reactions.(28)

He emphasised:

It is not alone with the separation and identification of products from the animal that our present studies deal; but with the dynamic side of biochemical phenomena.(29)

Hopkins argued against the theory of living protoplasm molecules:

There is... a view which, if old, is... still current in many quarters. This conceives of the unit of living matter as a definite, if very large and very labile molecule, and conceives of a mass of living matter as a congregation of such molecules... such a view is as inhibitory to productive thought as it is lacking in basis. It matters little whether... we speak of a

"molecule" or... "biogen" or any other similar expression...(30)

The argument against the notion of living molecules and the claim that the chemical reactions which constitute metabolism are simple and knowable appears consistently in Hopkins's writing over the following years.(31) In 1924, for example, he went so far as to declare:

There is every reason to believe that without great difficulty we shall come to know the details of every one of the multifarious reactions... within the living cell.(32)

In contrast Paton embraced the protoplasmic theory which Hopkins rejected. In the 1914 edition of a textbook he emphasised the exceptional difficulties involved in studying the chemistry of life:

It is impossible to analyse such an ever-changing substance as protoplasm, and, although what is left when... [the] chemical changes are stopped can be examined, such analyses give little insight into the essential nature of living matter.(33)

Paton explained "protoplasm" with a quote from Michael Foster:

We may speak of protoplasm as a complex substance, but we must strive to realize that what we mean by that is a complex whirl, an intricate dance, of which what we call chemical composition, histological structure, and gross configuration are, so to speak, the figures.(34)

For both Hopkins and Paton, the chemical processes of life were essentially "dynamic", but while Hopkins stressed that the dynamics of these processes could be studied like any others, Paton stressed that the dynamic nature of such living processes made "protoplasm" extremely difficult or impossible to analyse. Paton adhered to this view

throughout his life. In 1926, when he published a book which aimed to cast doubt on accepted teachings on inheritance and reproduction, his arguments relied upon and promoted the notion of "protoplasm". He again quoted Foster, and based his conception of heredity on these ideas:

The essential part of the conception of heredity is that it is simply transmission, not of structure but of modes of molecular motion - that is it is kinetic, not static or structural.(35)

In Paton's argument against the accepted view of differences in the structure of chromosomes as the cause of differences in inheritance, which he characterised as "the mechanical theory", he urged,

It must be recognized that the course of chemical changes in the protoplasm from generation to generation is as eternal as the chromosomes can possibly be, but while the latter structures are visible and manifest, the former is a process hidden and invisible...(36)

We are reminded here of MacKenzie's argument for regarding Bateson as a conservative thinker on the basis of his adherence to a view of the cell and inheritance similar to that expressed by Paton.(37)

Like Paton, Cathcart also frequently used the notion of "protoplasm" or "bioplasm". In a speech to the BMA in 1914, he emphasised,

...the fact that the active material of the body cells, the bioplasm, is a substance of unknown composition...(38)

Emphasis on the difficulty, or impossibility of analysing "living substance", appears as consistently in Cathcart's work as in Paton's, (or, for that matter, as consistently

as attacks on such ideas appear in Hopkins's work.) To Cathcart "protoplasm" was a complex containing protein, carbohydrate, and fat, about which little further could be said. Cathcart's view may be illustrated with extracts from papers which he published during the 1920s. In 1922, in a paper opening a discussion on "Basal Metabolism" at the BMA annual meeting, he stated:

The "active" substance of the cells is the complex material protoplasm, a substance which incorporates within its structure protein, carbohydrate, and "lipoid" material.(39)

Similarly, in a review on "Protein Metabolism and Muscular Activity" in 1925:

The organism, so far as the active tissue is concerned, is built up of a complex substance, protoplasm, which certainly plays the vital part in the various metabolic processes.(40)

If, as Paton and Cathcart suggested, protoplasm was impossible to analyse, the possibilities for studying chemical processes of cells were limited. This is apparent in their scientific methodology, for, unlike Hopkins they attempted to study chemical processes of the organism as a whole. Experiments conducted by Cathcart and Paton usually involved making deductions about metabolism from measurements of the body's output of substances while the diet, or another condition, was varied. Cathcart explained that in investigating metabolism

No matter the line of attack selected, the investigator is handicapped by the fact that he can only deal with the end products of metabolic activity.(41)

Experiments which Cathcart reported in 1914 to the BMA are



typical: Total nitrogen output, and the composition of his own and his colleagues' urine was measured during diets consisting almost entirely of fat or carbohydrates, and a discussion of the results led to the conclusion that protein, carbohydrate and fat are all required for normal physiological function.(42) Cathcart's studies on energy requirements and metabolism, which he began with Benedict,(43) represented an extension of this approach rather than any new departure - he began to study energy intake and expenditure as well as intake and output of various substances. Such methods had long been part of the approach taken by chemical physiologists abroad such as the Voit school in Germany.(44) In a book published in 1928, Cathcart is the only British scientist to be mentioned in a Preface entitled "The Scientific Descent of the Voit School".(45)

Paton took a similar experimental approach, and his later experiments, like those of Cathcart, also remained within the same mould. On moving to Glasgow, Paton began working on endocrinology, but this simply meant that as well as measuring output of substances during changes in the diet or environment he also measured the output of substances from, and gross changes in, the bodies of animals from which various glands had been removed.(46) Despite the modification in procedure, the focus of such experiments was still the metabolism of the body as a whole.

Cathcart deplored attempts to study metabolism of

tissues more directly, which he regarded as an aspect of the "mechanistic" approach which he rejected;

The whole mechanistic outlook to me is anathema... it is no use pottering about with isolated fragments. The... body consists not of a collection of parts but is a co-ordinated whole... One may accumulate... interesting facts ...by the perfusion of individual organs, but when one remembers that in the intact organism no part lives... for itself alone, the chances are that the facts observed are not representative of those which take place normally...(47)

The techniques which Cathcart attacked were just those in which Hopkins took great pride. Hopkins had begun to develop methods which he believed overcame the problem of the instability of biological materials, during research on the metabolism of amphibian muscle with Walter Fletcher during the late 1910s.(48) He regarded the techniques practised by Cathcart and Paton as superseded, as is evident from his interpretation of the history of biochemistry in a 1924 lecture. He explained that biochemistry's

...earliest endeavours... were mainly directed towards isolating... substances... with the intention of determining their constitution. To this... there was early added... a study of... the balance sheet of the body, a comparison of income and outgo... [which] permitted some,... very limited, conclusions as to the nature of the events in the body... It was... the opinion of many that chemical studies could not attain to much more than this. How... could information be obtained concerning events within living systems by methods which, at the moment of application, must... upset the whole of the significant and essential relations? Yet it is a fact that... [by] ...diverse methods... by studying the activities of isolated organs while their life is artificially maintained... by a score of... ingenuities of method, we are learning not only what chemical actions occur in living tissues, but the lines upon which reactions run, the

stages through which they pass, the equilibria which they attain.(49)

The point to emerge from the information presented so far is this - while Hopkins was engaged in developing a new reductionistic approach to the study of the chemical process of life, Paton and Cathcart adhered to, and defended, a holistic approach.

2.5. SCOTTISH PHYSIOLOGY, OUR ACTORS, AND THE MEDICAL PROFESSION, THE MEDICAL RESEARCH COMMITTEE, AND OTHER ORGANISATIONS.

Geison partly accounts for the relative early success of Scottish physiology by referring to the position that the Scottish Physiologists enjoyed with respect to the medical profession; in Scotland the medical schools had evolved from the universities, rather than from the hospitals as in England. Geison suggests that those engaged in medical research in Scotland enjoyed greater freedom from the demands of medical practice and therefore greater opportunities to develop knowledge.(50) By the end of the century, however, close involvement with medical education appears, for Scottish physiology, to have become a source of relative disadvantage, for the success of English Physiology at this time depended on a growing independence not only from medical practice, but also from medical education.(51)

Considering our actors, we find that Paton was closely involved with medical education, while Hopkins was anxious to avoid it. According to Cathcart, Paton was an enthusiastic researcher, but was

...equally enthusiastic as a teacher... one of the last "all round" professors of physiology... He was interested in physiology as a whole and he taught it as a whole. He was... really interested in teaching...(52)

Among Paton's publications were, Essentials of Human Physiology for Medical Students, which went through five editions(53) and A Practical Course of General Physiology for Medical Students, which went through four editions.(54) Paton spoke of the role of physiology in medical education in a 1927 speech on "The Relationship between Science and Medicine". He argued that the purpose of studying "preliminary scientific subjects" was to give "training in observation and reasoning", and claimed that the study of physiology could best provide this training:

Physiology... gives precisely what the medical man requires for making a diagnosis. He must know how to investigate the action of each part of the body in order that he may determine whether its action is or is not normal and healthy... And this knowledge must be real and practical, not acquired merely from books and lectures, otherwise it is useless... I remember well going round the wards of the Addenbrookes Hospital at Cambridge... and being struck by the inability of the students fresh from their courses of Physiology and full of book knowledge of the action of frog's heart and muscles to associate their knowledge with the condition of the patients...(55)

This passage is of interest because it begins to illuminate Paton's perception of the relationship between his own activities and medicine, but it also begins to illuminate his perception of "Cambridge", where Hopkins was based. Clearly, Paton perceived his style of physiology to be much more practical.(56)

Hopkins, unlike Paton, never published a textbook,

and, by his own account did not enjoy teaching medical students.(57) Such duties interrupted his scientific work after moving to Cambridge,(58) and threatened his ambitions to train biochemists rather than medical students after the war.(59) Mellanby took a similar attitude, for when he moved to Sheffield he was delighted that he was only responsible for 24 hours of lecturing per year.(60)

But physiologists could make connections with the medical profession, not only through direct local involvement with medical education, but also by directing their research towards problems with a more or less immediate bearing on medical practice. Moreover, by directing their work towards practical medical problems, they could seek to solicit various forms of research funding from the medical profession. Before 1906, it will be recalled that Paton, as superintendent of the laboratory of the Royal College of Physicians in Edinburgh was an employee of an organisation of the medical profession. But during the period under consideration the formation of the Medical Research Committee (later Council) (MRC), represented a new departure in the funding of medical research. Degree of involvement with the MRC serves as an indicator of the relative success of biomedical researchers, for through involvement with the MRC, control over a major source of funds for medical research could be obtained.

Of our actors, Hopkins was most closely involved with the formation of the MRC, attending its earliest meetings

in 1913.(61) His nomination of his Cambridge colleague, Fletcher, as secretary was accepted,(62) and Hopkins was one of six scientists who were asked to prepare proposals for research in particular areas.(63) He asked Mellanby's advice in conducting this task:

I want you to try to appraise the current chemical work in physiology, pathology, and pharmacology... If... you could prepare some sort of document pointing out the main lines on which chemical research is likely to help practical medicine, you would be doing much for me and chemical research...(64)

When Hopkins made his proposal, one suggestion was for a study of rickets, and his recommendation that Mellanby be given some of the work was accepted.(65) In 1918 Hopkins also became the Chairman, and Mellanby a member of the newly-formed Accessory Food Factors Committee (AFFC) appointed jointly by the MRC and the Lister Institute

...to consider and advise upon the best means for advancing and co-ordinating the various lines of inquiry into the modes of action of the factors in metabolism which are independent of the provision of energy...(66)

Fletcher was an enthusiastic supporter of vitamin research which he described as

...one of the biggest new things in biology... [which] may turn out to be more fundamental than we guess... As for medicine, it is out and away the biggest thing...(67)

Fletcher regarded Hopkins as the discoverer of vitamins and attempted both to encourage Hopkins to continue work on the subject,(68) and to maintain control of the field for the MRC, through the AFFC.(69)

Paton was much less centrally involved in the MRC than

Hopkins and did not enjoy a close relationship with Fletcher. He did not become a member of the Council until 1918,(70) when he became the first Scottish physiologist to be appointed. A year later he became Chairman, and Findlay a member, of the MRC's newly-formed "Antenatal and Post Natal Child Life Committee." (71) The main piece of work done by Paton and Findlay for this Committee was a six-year study for a report on "Poverty, Nutrition and Growth", which was published in 1926,(72) but was only partly funded by the MRC.(73)

A comparison of the membership of Paton's Child Life Committee with the membership of Hopkins's Accessory Food Factors Committee illustrates how Paton related more directly with the medical profession than Hopkins. While the members of Paton's committee were primarily clinicians or public health personnel,(74) the members of Hopkins's committee were primarily research scientists.(75)

Paton's and Hopkins's relationships with the medical profession are reflected in their views regarding the most effective means of advancing medical research. Paton proposed that clinicians were more likely than laboratory workers to make significant advances, while Hopkins proposed the opposite. Paton declared in 1927 that the

...scientific physician at the bedside, supported... by laboratory facilities... is far more likely to make real progress than any of that throng who, destitute alike of imagination and critical faculty, are lured by endowments of scientific research from the arduous struggle for existence into the sheltered groves of laboratory science. They indeed become a real danger to the advance of knowledge. Starting from nowhere and

going no-whither, generally ignorant of what has to be done and not seeing what to do, they flicker their silly lamps in all directions and only obscure the path of real progress.(76)

Hopkins gave his opinion during his 1924 Huxley lecture:

...it is no reflection at all upon the great art of medicine... to claim that the great and sudden advances that have occurred in the history of modern medicine have been based upon knowledge first gained in the laboratory... The reason is obvious. The clinician must in the main rely on observation rather than experiment.(77)

Paton's opinion was that "laboratory services", should be for the support of physicians, but Hopkins believed that the "laboratory specialist" should have the status of consultant, and should be considered a colleague by the physician.(78)

Findlay regarded his relationship with Paton as an example of an ideal alliance between a clinical and laboratory worker. He explained in 1922 that,

...it is exceptional for the head of a physiological department and the head of a clinical department to become allied for serious and consecutive research... I sincerely believe that if such alliances were more general much discordant opinion on facts of everyday occurrence would disappear...(79)

Findlay, like Paton, despised those whom he regarded as out of touch laboratory scientists.

Mellanby, who was accused by Paton and Findlay of being an irresponsible laboratory worker during the rickets controversy,(80) actively sought and acquired a post which provided both laboratory and clinical facilities,(81) and later celebrated this as an ideal situation.(82)

But the medical profession did not constitute the only

group to which our actors could address themselves, and the Medical Research Council was not the only body which awarded grants to support their work. But here again Paton's few minor investigations contrast with Hopkins's central involvement in the organisation of an extensive national scheme of research. In 1898 Paton published a report on the "Life History of the Salmon in Fresh Water" for the Scottish Fisheries Board, in 1900 "The Diet of the Labouring Classes of Edinburgh"(83) for Edinburgh Town Council, and a few years later, work on famine foodstuffs and vegetarian diets for the India Office.(84)

Hopkins, in contrast, was closely involved in the Food Investigation Board which began in 1917 when he and three other Fellows of the Royal Society(85) were consulted by the Department of Scientific and Industrial Research(86) for advice on a scheme of research on the cold storage of food. The Board became an institution through which a wide range of scientists contributed to attempts to base the post-war recovery of Britain on the development of the Empire. Hopkins also became involved with the establishment of a Low Temperature Research Station for the Board at Cambridge.(87).

Within the classification of our actors in terms of their relationship to the medical profession, Cathcart is rather harder to place than Hopkins and Mellanby on the one hand, and Paton and Findlay on the other. Cathcart was less closely involved with medical education than Paton, as is evidenced by his publishing activities. However, teaching

continued to be an important role of the Physiology Department under Cathcart's leadership, and according to his Royal Society biographer, Cathcart regarded teaching and administration of the Department as his "sacred duty".(88) But Cathcart's work includes no explicit discussion of the roles of laboratory and clinical workers in advancing medical knowledge.(89) This was a less important issue for Cathcart, not only because of his relative lack of involvement in medical education but also because his work was increasingly concerned with matters which had little bearing on medicine. During the war Cathcart was a member of the Royal Army Medical Corps and from 1915 became Deputy Director of Anti-gas Services, Home Forces. In 1917 he was transferred to the staff of the Director-General of Army Medical Services, for whom he became Minister of Food Liaison Officer.(90) He also conducted experiments on the energy requirements of soldiers.(91) Following the war he became one of two civilian members of the Army Hygiene Advisory Committee, for which he carried out a series of investigations concerned with energy expenditure and requirements.(92) In 1921 Cathcart became a member of the Physiology of Muscular Work Committee of the Industrial Fatigue (later Industrial Health) Research Board,(93) an organisation administered jointly by the MRC and the Department of Scientific and Industrial Research. In 1927 he became a member, and then Chairman of this Board. Cathcart was Chairman of the MRC's Committee on Quantitative Problems in Nutrition, which was

established in 1921, and in 1924 he published, for the MRC, the first of five dietary surveys over the next fifteen years.(94) Cathcart's activities during the 1920s also included lecturing to Glasgow Engineering Students on "The Human Factor in Industry", (95) and he was also involved with the local Domestic Science college.(96)

The main points to emerge from this section, which are of immediate importance for the following section are those arising from the comparison of our actors' connections with the medical profession. Hopkins shunned involvement in medical education but enjoyed central involvement with the MRC. Paton was enthusiastically involved with medical education, but was marginally involved with the MRC. Hopkins advocated a new theoretical discipline, but he proposed that it would lead to major advances in medicine, and advocated that its practitioners should be considered the equals of clinicians. Paton, in contrast, advocated that laboratory work should be kept closely in touch with clinical problems, and proposed that the laboratory worker should have a subsidiary role to that of the clinician.

In the following section the alignments which we have explored will be exploited in a study of the controversy over the aetiology of rickets which took place from 1918 to 1923, and will be seen to provide valuable insights.

2.6. THE RICKETS CONTROVERSY.

Findlay was originally interested in a form of anaemia, which, it was taught, was associated with rickets, and he

embarked upon experiments in which blood changes during rickets would be followed.(97) He fed pups a milk-free diet to induce rickets, but this caused wasting, while pups receiving milk, apart from one animal given more exercise, suffered the disease. In 1908 he published a paper which reviewed and criticised congenital, hereditary, infective, and dietetic theories of rickets, presented his experimental results, discussed the geographical and seasonal occurrence of rickets and concluded:

Faulty feeding is the cause of much infant mortality, but that it plays any important part in the etiology of rickets is very doubtful... confinement, with... lack of exercise, is the main factor...(98)

In 1914, Glasgow was chosen by the MRC as a centre for rickets research, and was one of the few centres which continued working on rickets after the outbreak of war.(99) The original scheme was drawn up partly by Hopkins(100) who later said that he had envisaged that Paton would conduct a "large extension of the careful statistical studies he was then inspiring."(101) But the work in Glasgow became very much more diverse. The first MRC Annual Report(102) mentioned social and dietary investigations, histological and experimental work, endocrinological studies, and research on metabolism in rickets, all under the supervision of Paton and the Professor of Pathology.(103) One of the first products of this work was a paper by Findlay in The Lancet in 1915, which reported results of a statistical survey which broadly supported his earlier hypothesis. He presented evidence to show no relationship

between rickets and "length of time at the breast" and "intestinal troubles", but a definite relationship with "amount of air space in the house allowed to each child", and "amount of time spent in the open".(104)

Mellanby was also invited to work on rickets for the MRC in 1914.(105) He suggested to Fletcher that his project might be called "An investigation into the various methods of producing experimental rickets", (106) and he was working with puppies by the end of the year.(107) In mid-1915 he acquired accommodation in London for extra dogs, in 1916 extra laboratory assistance,(108) and in 1917 further accommodation and help at Cambridge University Field Laboratories.(109) The 1916-17 MRC Report announced that Mellanby had shown that rickets could be produced or prevented in puppies by manipulating the diet.(110)

Controversy about the aetiology of rickets erupted between Mellanby and the Glasgow Group in 1918.(111) Early in the year Mellanby reported to the Physiological Society that

Rickets is a condition primarily due to the lack of an accessory food substance... lack of exercise may play some part but not a primary part...(112)

Six months later the MRC published a study of "Social and Economic Factors in the Causation of Rickets", by Margaret Ferguson, under the supervision of Paton and Findlay. Ferguson concluded:

The habits of the mother and the care taken of the children have a marked effect... The evidence is against a deficiency of milk, of butter, or of the fat soluble A substance [the

vitamin favoured by Mellanby] being a determining factor...
Inadequate air and exercise seem to be potent factors...
The cleanliness of the house was distinctly better in non-rachitic than in the rachitic family.(113)

The report included some "General Considerations" in which Paton and Findlay suggested that it was now worth investigating the possibility that rickets was caused by "some non-specific infection".(114)

Fletcher was concerned that the publication of conflicting results would harm the credibility of the MRC, and consulted Hopkins and Mellanby in the writing of an introduction which mentioned Mellanby's theory and suggested an alternative interpretation of Ferguson's surveys. This angered the Glaswegians, who demanded that the introduction be abandoned or changed.(115) Fletcher was loath to do this, but told Hopkins:

...if we could alter a phrase or two so as to please them... that would be worth doing. All we have done is sound a note of caution; if Findlay turns out to be right he will score all the more because we were cautious. If Mellanby is right we shall have safeguarded our scientific judgement and at the same time will allow Findlay a golden bridge of retreat. It is silly of them not to see that.(116)

The introduction was printed substantially unchanged.

In December 1918 Mellanby reported further results connecting rickets to a vitamin deficiency,(117) and soon afterwards the Glasgow group, with further results of their own, argued against him in the British Medical Journal. This was the first of a series of contributions by the Glasgow Group in which, when addressing a medical audience,

they cast Mellanby as an irresponsible and naive laboratory worker. They declared:

Till his evidence has been published it is... impossible to estimate the value of his observations. The present vogue for "vitamines" and "accessory food factors" seems to have led to the... premature adoption of a theory.(118)

In July 1919 the Accessory Food Factors Committee produced a memorandum for famine relief workers, which included recommendations based on the vitamin theory of rickets.(119) This was prepared by Hariette Chick(120) of the Lister Institute, and was discussed and approved by Hopkins and Fletcher.(121) From the tone of the press statement issued with the memorandum, they obviously set great store by the vitamin theory of rickets. There were said to be three vitamins, one of which, the anti-rickets factor, was of

...very great practical importance, for its discovery shows that rickets is largely a preventable disease. New knowledge is thus placing in our hands the power to eradicate a shameful scourge... which is an ugly blot on our civilisation and one of the greatest obstacles to the attainment of a higher national standard of physical fitness and efficiency.(122)

Soon afterwards the Committee decided to send some workers to Vienna, where rickets was rife, in order to conduct clinical experiments.(123) They worked in the childrens' hospital of the highly respected paediatrician, Professor von Pirquet.(124) This was an important move, because through this work the advocates of the vitamin theory were able to defeat the Glasgow Group on ground which the latter increasingly defined as their own.

The first face-to-face confrontation between Mellanby

and Paton was in early 1920 at a Royal Society of Medicine discussion on the importance of vitamins in infant feeding. During the opening address Mellanby rejected exercise as a "prime factor" in rickets and argued that the "inhibitory effect" of exercise in puppies could be discounted in children:

...rickets develops in many babies when only six months old, and it is difficult to see how running about can play a large part...

He ridiculed the Glasgow Group:

Surely the size and number of rooms in a house where the child may carry on its movements is of subsidiary importance to its diet... It seems to me absurd to think that the widespread and intense nature of rickets in Vienna and elsewhere... has arisen primarily because of any lack of exercise or because of the more defective hygienic conditions which may have developed...(125)

Paton began his speech by declaring that it was the duty of the physiologist

...to present for the acceptance of his clinical brother only those results which have been thoroughly tested... he should not insult his intelligence by asking acceptance of statements without the evidence being given. This is just what I object to in this present craze for vitamins...(126)

He described the section on rickets of the AFFC Report(127) as an invitation to "open your mouth and shut your eyes". In reply Mellanby defended the record of the "laboratory worker" and patronisingly explained Paton's

...excessive view of things... [as] ...due to the subject having been written up in the press, and those who have done it... have always given their imagination too much licence. The laboratory worker has, on the whole, been careful in making claims, and has usually done so with the full sense of responsibility. That people write extravagantly about vitamins is not our

fault.(128)

Following the meeting Paton sent Fletcher a memorandum which argued that the conflict, which he blamed on premature dogmatic statements by Mellanby, was discreditable to the MRC, and argued for the appointment of a separate committee to consider rickets research.(129) The matter was discussed at an MRC meeting, after which Mellanby was asked to start preparing a report of his research,(130) and a Rickets Committee was set up,(131) to which the main participants in the controversy were appointed.(132) In May 1920, the new Committee visited Mellanby's laboratory, but Paton was unimpressed. In a letter which gave his impressions of the visit he conceded that diet played some role, but claimed that the evidence still failed to show that rickets was primarily a specific vitamin deficiency:

Mellanby's more recent results indicate that proteins may act as well as fats, and raise the question of whether the effect of feeding is not one on general metabolism produced by a variety of materials. This invalidates the conclusions in the Vitamine Committee Report, which... ascribes the condition to the want of an accessory food factor...(133)

Paton's argument here echoes the argument against "mechanistic" approaches mentioned in section 2.4. From his holistic viewpoint, Paton could accept that changes in the gross composition of the diet could influence rickets through changes in "general metabolism", but he could not accept the idea that the disease could be simply caused or prevented by changes in a very small component of the diet.

The Rickets Committee did little to prevent further

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controversy. In July 1920, at the BMA annual meeting, Hopkins declared his faith in Mellanby, and also defended the vitamin concept itself. The direction of his remarks indicates his concern with convincing the medical profession of the value and importance of vitamins:

I refuse to speak of the vitamin "hypothesis". Vitamins, though still of unknown nature in the chemical sense, are not... hypothetical... there is at the moment some scepticism concerning the whole question, particularly perhaps among certain members of the medical profession... I have met it lately in high quarters...(134)

He referred to Robert Hutchison's(135) reference to vitamins as the "latest dietetic 'stunt' ",(136) at the Royal Society of Medicine meeting, and replied

...whether or not the deficiency diseases are few or many... the conception of vitamins is no stunt. It is based upon experiments as conclusive as any in biological science.(137)

Hopkins presented what he regarded as "unequivocal" evidence for the existence of vitamins. Nevertheless, he still failed to impress Sir James Barr,(138) the Vice President of the BMA, who during the discussion, declared of the work of Mellanby:

All these observations are easily explained without invoking any recondite influences of "vitamines"... The acid fermentation of an excess of carbohydrates will saturate the free calcium ions and even dissolve the calcium already deposited in the tissues. On the other hand, proteins will readily take up large amounts of free acids, and exercise increases calcium metabolism.(139)

This scepticism regarding the vitamin theory, which existed among members of the medical profession, obviously provided a receptive audience for Paton's argument that Mellanby was disrespectful of clinicians. In addition, the "chemical

physiological" style of Barr's explanation is noteworthy. Like Paton he preferred to explain the effect of diet on rickets as an effect of changes in the gross composition of the diet on a particular conception of "general metabolism".

Hopkins's argument for the importance of vitamins, and against older means of assessing the adequacy of diets according to energy content, was most fully developed in his 1921 Huxley lecture. He attacked Rubner's "Law of Isodynamic Equivalence", (140) which involved the principle that "...one foodstuff can replace any other so long as the replacement makes no change in the supply of energy", (141) and von Pirquet's system of infant feeding which was based on it. (142) Hopkins's argument against Rubner followed similar lines to his argument against "protoplasm", for he claimed that Rubner's Law, like "protoplasm" inhibited productive thought regarding the chemical processes of life:

It is always a... relief to the mind when by generalisation... it is enabled to neglect details. This relief is given in many branches of science by the application of the principles of thermodynamics... [which allow] certain quantitative statements concerning... phenomena without... reference to the molecular mechanisms which underly the phenomena. (143)

Hopkins's argument for attention to the chemical composition of the diet referred to work on protein quality, on the limits of interchangeability of fat and carbohydrate, and on vitamins. He then turned to the importance of vitamins for practical medicine:

If... these considerations... bore only upon...

production of actual disease they would have far less importance than, in my belief, is actually attached to them. A deficiency which when extreme produces actual disease will almost certainly, when less extreme involve some failure...(144)

He described a case of general malaise in public school which was cured with fresh fruit, and suggested that although there was no scurvy, the malaise had been due to a need for the anti-scurvy vitamin. He continued,

If the practitioner, when considering whether diet may not be the cause of ill-health has in his mind the idea of specific deficiencies he will no longer reject the possibility when general underfeeding or ill digestion alone have been excluded. Realising that details must be considered, he will, in my opinion, be able to ascribe more to diet than hitherto, and at the same time extend his list of cases diagnosed...(145)

In conclusion, taking up the challenge of the Glasgow Group, Hopkins staked the truth of his argument on the outcome of the clinical experiments in Vienna:

I cannot help holding very firmly... that Vienna will show how important are recent advances in the science of nutrition.(146)

He was staking not only the vitamin theory of rickets, but the value of the reductionistic thought which he advocated, on the outcome of the Vienna experiments. The Glasgow Group later referred to the views of von Pirquet in support of their case,(147) and the outcome of the experiments in Vienna did become an important factor in the eventual cessation of the Glasgow Group's public criticisms of the vitamin theory.

After prompting from Fletcher,(148) Mellanby completed the report of his experiments in February 1921.(149) Towards the end of March Fletcher sent a copy to Paton, but

Paton's assistant replied:

He [i.e. Paton] thinks it fair that he should not look at it until he has sent off the proofs of a paper... upon rickets.(150)

Paton's paper reported experiments in which it was found that

...under ordinary laboratory conditions, a liberal allowance of milk fat... neither prevents the onset of rickets nor cures it when it has developed.(151)

It was also found possible to rear ricket-free pups outside on very low milk fat diets, and in the laboratory, "with scrupulous care as to cleanliness", and the suggestion that rickets may be caused by a "bacterial infection of some non-specific character" was repeated. On the clinical front, Findlay published results of therapeutic experiments in which massage and electrical stimulation was found to be the most effective treatment.(152)

Paton sent his comments on Mellanby's report to Fletcher in May 1921. He refrained from making detailed criticisms because, he explained, "It might be thought... I am prejudiced" but suggested that

...some other member of the Council who has experience in the preparation of papers... should be asked to give an opinion upon its suitability for publication... It seems to me that the paper, and more especially the later parts, have been written in a hurry... They are very diffuse... Mellanby might be given the opportunity of revising them.(153)

There is no evidence that Fletcher acted upon Paton's suggestion.

About a month later, Paton wrote to Fletcher criticising Mellanby's work on a different topic. Mellanby

had claimed at a Physiological Society meeting that a high fat consumption led to hyperplasia of the thyroid,(154) but Paton complained that this conclusion was invalid as Mellanby had failed to supply the ages and weights of his dogs. Paton had found records of his own experiments to be contrary to Mellanby's claim. He continued:

I do not want to go for Mellanby, but if you are a friend of his and have any influence on him, you should try to induce him to publish the evidence upon which the conclusions are based.(155)

But Fletcher, who had been at the meeting, told Paton that he accepted Mellanby's conclusions, and expressed surprise that Paton had not produced similar results.(156) In November 1921, Paton produced a second memorandum in which he suggested that the MRC was being discredited due to contradictory statements about rickets in MRC publications.(157) He again suggested that this had arisen from premature publication by Mellanby and proposed that the Rickets Committee be reconstituted. But Hopkins responded with a memorandum which pointed to dogmatic statements with which Findlay and Paton had concluded Ferguson's report,(158) and objected to Paton's treatment of Mellanby:

Mellanby has been blamed for premature publication, and then for delaying to publish. He has been dealt with almost as though he were an offender before the High Court, or at least as an amateur fairly subject to admonitory criticism, instead of being, as he is - an investigator of fifteen years standing thoroughly conversant with metabolic studies and a quite exceptional expert in the behaviour of the animals in which his studies have been made. An honest and indefatigable worker, he has been dumbfounded and most profoundly depressed by the antagonistic

attitude of a member of the Council for which he worked.(159)

At the Council meeting when these memoranda were discussed, it was decided to add two new members to the Rickets Committee.(160)

In Mellanby's report, published in December 1921, he presented results of experiments on the effect of various dietary factors, and confinement on the development of rickets. In his summary he contrasted four conditions which tended to prevent rickets:

- (1) Plenty of calcium and phosphorus...
- (2) Something associated with certain fats probably identical with the fat-soluble vitamine.
- (3) Meat.
- (4) The possibility of exercise.

with six conditions which were rickets-producing:

- (1) A deficiency of calcium and phosphorus...
- (2) A deficiency of fat containing the anti-rachitic vitamine....
- (3) Excess of bread, other cereals, and carbohydrates.
- (4) Absence of meat.
- (5) Excess of the protein moiety of caseinogen free from calcium.
- (6) Confinement.(161)

Mellanby was in the process of constructing a comprehensive theory which took into account predominantly dietary factors. This was the starting point for the development of Mellanby's version of the newer knowledge of nutrition.(162) But the Glaswegians were still not impressed. They continued to assert the superiority of clinical evidence, and began to suggest that the condition which Mellanby observed was not comparable with human rickets. As the evidence mounted against them Paton began to make conciliatory overtures, but Findlay remained

unrepentant. In April 1922, in "A Review of the Work Done by the Glasgow School on the Aetiology of Rickets", Findlay explained that the dietetic school had its "stronghold in Cambridge", while his school believed

...that defective hygiene... in its widest sense, is the most important known determining factor...(163)

In arguing against the vitamin theory Findlay referred to American clinical experiments in which children on skimmed milk with cotton seed oil showed no greater an incidence of rickets, than children on whole milk;(164) to his own work in which children on a "fat-poor" diet remained ricket-free, (which, he pointed out, was also von Pirquet's experience);(165) and to work which showed that the disease in India was associated with the Purdah system.(166) He discussed rickets as an infection in more detail than before, and finally concluded that all that could be said was that

...in some way confinement and defective hygiene are the most potent causes... That diet plays a subsidiary part, if any part at all, I have no doubt... It was the idea that confinement and defective exercise caused the disease that suggested the line of treatment viz - massage and electricity, and has given, in our hands, the best clinical results.(167)

Findlay finally suggested that the disease in Mellanby's pups was not comparable with childhood rickets.

In July 1922 Findlay, Mellanby and Paton met face-to-face at the BMA meeting in Glasgow when Findlay opened a discussion on rickets. In his opening sentences, Findlay sought to establish his authority to speak on the subject:

...the final battle regarding the etiology of rickets... must be fought out in the clinical field. It is admission of this fact, I take it, which is responsible for the... duty of opening the discussion falling upon me, a clinician.(168)

Findlay accepted the prophylactic power of cod liver oil,(169) but soon disposed of diet as a major factor. He claimed that work in London had been unable to cure rickets with cod liver oil or butter,(170) and discussed the American experiments referred to above.(171) Findlay noted that the "vitamists" objected to these experiments "on the ground that cotton seed oil is one of the best of the substances low in fat soluble A"(172) and then launched an attack on Mellanby:

In 1919 we find cotton seed oil classified... [by the AFFC] among those fats not protecting against rickets, yet Mellanby in his recent... lectures states that its antirachitic power is moderate. One has difficulty in understanding Mellanby's... opinion, since in his detailed work... he records, in all, three experiments with cotton-seed oil, two of which developed rickets, and in the other he describes the bones as practically normal... Is it that Mellanby has been influenced by Hess's [the American researcher's] clinical results? If so, then for similar reasons much of his dogmatism about fats and their antirachitic powers must be abandoned.(173)

Findlay's arguments then followed similar lines to his review of research in Glasgow, and he finally suggested that

...in both the experimental and the clinical fields the notion of rickets being of the nature of an infection should be seriously entertained and investigations with this idea in view more generally undertaken.(174)

Mellanby, in his contribution, was at pains to ensure that his views were "correctly understood and not

misinterpreted" and he explained his view of rickets as a disease

...accompanying growth... a disease which follows the ingestion of diets relatively poor in the anti-rachitic vitamin and rich in the growth promoting elements, and more particularly in cereals...(175)

Mellanby discussed the interaction of fat soluble vitamin, calcium, phosphorus, cereals, and hygiene. He did not respond to Findlay's criticisms but referred his audience to his previous comments on the "exercise hypothesis." Finally, despite Findlay's suggestion that he had been chosen to speak first because he was a clinician, (which implied that the other main speaker was not), Mellanby, now Honorary Physician to Sheffield Royal Infirmary, was also able to give an account of his clinical experience. He gave details of a diet which, he said, he had invariably found to produce rapid cure of rickets.

In his contribution, Paton examined Mellanby's evidence for the recommendation of the AFFC, that milk was an anti-rachitic agent.(176) Finding the evidence contradictory and sparse, Paton concluded,

...it is unfortunate that a scientific body should, without more proof, have interfered with practical dietetics.(177)

He echoed Findlay with an assertion that the "possibility of a microbial origin" had not been adequately investigated and suggested that the negative results obtained in attempts to infect puppies with rickets raised the question of the comparability of the human and canine disease. But he ended on a conciliatory note:

I feel strongly that it is the duty of those of us who are trying to solve these problems not to work in isolation, but to combine and to devise and carry out a definite plan of campaign, and to refrain from theories until we have accumulated facts.(178)

When Mellanby returned from Scotland he found waiting for him a letter from Paton, dated 16 August 1922, which he privately referred to as "Paton's Hatchet Letter". Though Paton's letter no longer survives, it appears that he proposed some sort of truce. Mellanby replied:

I expect you will smile, but, I hope, not misunderstand it when I say that as regards the hatchet between us, I have never yet had the opportunity of getting it into my hands as I have been too busy protecting my own hand. Any burying ceremony I should welcome with delight. In any case I shall be glad to criticise in a friendly spirit any results of your recent experimental work that you may care to send along.(179)

Unfortunately there are no further records of this exchange, but the Glaswegians were certainly under pressure to reach a compromise, for within months three MRC reports were published which supported Mellanby.

In December 1922 a report was published by H.Corry Mann,(180) who, before the war, had collected data regarding the financial circumstances and accommodation of families, and claimed to have prevented rickets with milk. Later work, supported by the MRC, was discontinued when he went abroad on war service,(181) but he resumed work in 1919, which led to his report, "Rickets: The Relative Importance of Environment and Diet as Factors of Causation". He concluded:

There has been no evidence from the investigation in London that bad housing, overcrowding, and deficient air-space are responsible for the onset

of rickets.(182)

Later in the month a formidable report by Professor Korenchevsky(183) was published. Korenchevsky, a Russian exile, had conducted experiments on rats at the Lister Institute. His report, which ran to almost 200 pages and listed over 400 references, included accounts of experiments which attempted to produce rickets by confinement and injection of bacteria, as well as extensive feeding experiments. Of the latter, Korenchevsky stated:

...I am forced to the conclusion that the results are in general agreement with Mellanby's... and would appear to disagree with the results arrived at by other authors...(184)

Despite these reports, Mellanby's views on the primacy of dietary factors still did not seem to have been accepted by all the members of the Rickets Committee, for in January 1923 when they formulated unanimously agreed conclusions, one conclusion was that normal bone formation is favoured by cod liver oil but another conclusion stated that

...the question of whether... [rickets]... can occur on an adequate diet with the administration of cod liver oil was not considered settled.(185)

This was the last meeting of the Rickets Committee.

Six months later a report of the work in Vienna was published. In the introduction von Pirquet explained that when the study began he had had

...little expectation that it would lead to results of much practical value... I was of the opinion that a vitamin deficiency in our ordinary diet was a very exceptional occurrence... With regard to the aetiology of rickets I held the view that it was an infectious disease ...but the third year of... [this] work shed new light on the subject... Of the large series of young infants maintained under exactly the same

conditions of excellent general hygiene, rickets developed only in those who received the diet poorer in fat-soluble vitamins... the chain of evidence now seems to me to be complete that animal experiments upon rickets are applicable also to man, that rickets is a disease of nutrition, and that deficiency of fat-soluble vitamins in the diet is the essential cause...(186)

The study had originally been concerned with the role of diet, general hygiene, and infection, but light was later added to the list of factors studied. This extension of the work had been prompted by publication of research showing that rickets could be cured with ultra-violet light.(187) Both Findlay and Mellanby had discussed this work during their speeches in Glasgow, and both had attempted to assimilate the results into their own theory.(188) The work in Vienna confirmed the curative effects of ultra-violet light, and referring to this the report concluded:

The adherents of both dietetic and hygienic theories have urged the sufficiency of their particular view of the matter. It is now abundantly clear, however, that in the prevention of rickets both diet and sunlight play a part, and that, in so far as it is not exclusive, each theory resumes a measure of truth.(189)

At around the time of the publication of this report, Hopkins gave two lectures in Edinburgh on the occasion on which he was awarded a prize for his contributions to practical therapeutics. He used the opportunity to claim victory and propose a peace settlement. During the first lecture he remarked,

...the real and objective existence of vitamins must not now be doubted, and I feel the more tempted to express here and now a strong opinion on this point because it is in Scotland, and I think, save very early, in Scotland alone, that doubts about their existence... or practical

importance - have arisen... When I recall certain... statements... I almost feel that I have crossed the border to accept a challenge!(190)

During the second lecture, Hopkins pressed his point home. He explained that he had chosen his topic, "Rickets as a Deficiency Disease", because of a

...desire to pay a public tribute to the work of a friend whose successful efforts... have, I feel, lacked proper appreciation in some quarters... I feel it incumbent upon me to insist strongly upon the importance of the work of my friend and former pupil, because in certain quarters at least it was received with somewhat carping criticism, still not frankly withdrawn.(191)

But after discussing the evidence for the preventative action of sunlight, Hopkins concluded on a more friendly note, echoing the conclusion of the report on the work in Vienna:

...since a proper supply of sunlight is certainly a factor in hygiene, and a vitamin is no less a factor in diet, I think... that the facts as now known should form a basis for an honourable peace between the two opposing schools of thought...(192)

The publication of the Report on the research in Vienna, was certainly the most important factor in the cessation of public controversy between Mellanby and his allies and the Glasgow Group. The Glaswegians had consistently proclaimed the importance of clinical evidence, and had quoted von Pirquet in support of their views. They apparently continued to oppose consensus after Corry Mann's and Korenchevsky's reports, but after the publication of the work in Vienna the Rickets Committee ceased to meet, and there was no further public propagation of alternative

theories, or criticisms of Mellanby, by the Glasgow Group.

We have now seen how concern with the relationship between themselves and the medical profession was a central issue for Hopkins, Mellanby, Paton and Findlay during the rickets controversy. Findlay attempted to support his position by stressing his credentials as a clinician; Paton attempted to support his position by stressing his respect for clinicians; and they both attempted to discredit their opponents as disrespectful to clinicians. The style of explanation of rickets which Paton advocated, was similar to that of a leading clinician who was sceptical of the vitamin theory. Paton and Findlay appear to have been silenced, when, after their rhetorical references to the importance of clinical research, and to von Pirquet's support for their views, clinical experiments, accepted by von Pirquet, showed the vitamin theory of rickets to be efficacious. At stake for the Glasgow Group was the possibility of reversing the relative decline in their standing which has been noted, while Hopkins staked the value of the reductionistic thought which he advocated on the outcome of the controversy. We will see later that Mellanby's experiences in the rickets controversy conditioned his ambitions for the institutionalisation of nutrition.

Having now considered the contrasting approaches of our two groups of actors to the chemistry of life, and having contrasted their institutional commitments, and illustrated these factors by means of an account of the

rickets controversy, we will now move on to consider their contrasting approaches to "nutrition".

2.7. CONCEPTIONS OF, AND APPROACHES TO NUTRITION: INTRODUCTION; NUTRITION AS A CLINICAL STATE.

In this section we will consider the approaches of each of our groups of actors both to the study of nutrition and to the social application of nutritional knowledge. It will be suggested that the contrasting approaches to both these aspects of nutrition, like the contrasting approaches to the chemistry of life, may be characterised as conservative and natural-law styles of thought. Differing styles of thought are most evident when they are contrasted directly with one another, but for ease of exposition we will discuss the Glasgow group's approaches to the study and application of nutrition in sections 2.8 and 2.9, and will then deal with Hopkins and Mellanby in sections 2.10 and 2.11. These approaches to nutrition as conservative and natural-law styles of thought will then be discussed at the end of the chapter.

During the period with which we are concerned, "nutrition" was also used within medical circles to refer to a clinical state of the body. Before considering our actors' approaches to the study of nutrition, and the social application of nutritional knowledge, we will firstly consider their use of "nutrition" as a state of the body.

"Nutrition" was used as a clinical state by, for example, Robert Hutchison and Harry Rainy, (193) in their textbook

published in 1897. They listed "General state of development and nutrition" as the third item to be assessed in clinical examinations, and they developed a particular methodology to do this. They advised that height and weight should be measured and compared with tables which they provided, before

...the state of nutrition is observed. ...one notes whether the patient is... stout, ...well nourished, or ...emaciated. In health there is a fair quantity of... fat, the muscles are of moderate size and firm... the skin is elastic and neither very moist nor very dry. When nutrition is perverted, the muscles become flabby, ...the subcutaneous fat is increased... to become burdensome...; or emaciation sets in, owing to the balance between ingestion and excretion becoming deranged...(194)

The assessment of nutrition in this sense became more established with the 1907 Education Act which introduced medical inspection of schoolchildren. George Newman,(195) Chief Medical Officer of the Board of Education, issued to Education Authorities a schedule in which "Nutrition" was one of four "General Conditions" to be assessed. (The other "General Conditions" were Height, Weight and Cleanliness and Condition of skin.) The children were to be classified as "good", "normal", "below normal" or "bad", for each "General Condition". Newman discussed the assessment, and the nature of "nutrition" in his 1908 Board of Education Report. He stated that it was impossible to give figures comparing state of nutrition throughout the country because

...there is no absolute standard... of healthy nutrition, nor... any definite criteria upon which to form a judgement. ...individual bias or personal equation plays so prominent a part that any comparison of statistics... is impracticable...(196)

(In spite of these remarks such figures were given in the following year's report, and the practice continued for several years.) Turning to "the determination of the condition of nutrition", Newman said that this required

...an understanding and appreciation... of what is included in the term "nutrition". There is... the body frame-work,... the muscular system and the development of the physique... these are primary factors... But they do not include all that must be thought of... There is something more to consider... It is the digestive, excretory, circulatory and nervous systems in effective working order, which must be thought of as lying at the back of the signs for determining nutrition... Good nutrition stands... for... a body the various parts and functions of which are working together in harmony and precision... these are matters impossible to determine by inspection except in a general and practical way.(197)

The holistic nature of Newman's concept of nutrition is apparent.

In the work of our key actors, nutrition as a state of the body has a prominent place only in Paton and Findlay's 1926 MRC Child Life Committee report, "Poverty, Nutrition and Growth". This contained a section on the "Assessment of Nutrition" which began:

Before discussing the assessment of nutrition it must be clearly understood what is implied... Nutrition does not refer to... height... state of health, or ...muscular activity. A child with a small store of fat and good muscular development may be perfectly healthy... yet not... well-nourished. A lethargic child with... a disproportionate amount of fat, may... be considered well nourished. Nor has nutrition anything to do with growth- a dwarfed individual may be well-nourished and an unusually tall individual poorly nourished. Nutrition simply refers to the manner in which an individual absorbs and assimilates his food, in short increases his bulk. Hence weight must be the chief factor in assessing it...(198)

Due to the vagaries of the clinical assessment, since

the late nineteenth century, many formulae had been devised, mostly abroad, which, using various measurements gave "Indices of Nutrition".(199) An individual's "state of nutrition" could be assessed by working out his or her Index, and comparing it with a standard. None of these indices became generally accepted. In the 1926 report, the literature on Indices was reviewed, and an investigation into their value was reported. This involved working out correlations between the Indices and assessments of the state of nutrition carried out by doctors. This was compared with research on intelligence where pupils' scores in intelligence tests were correlated with their teachers' estimates:

...it is but reasonable to suppose that the...
[physician] is as capable of assessing the
nutrition of his patients, as the teacher is of
judging the intelligence of members of his
class.(200)

There were evidently differences between Paton and Findlay's and Newman's uses of "nutrition" as a state of the body. For Newman "fair growth", "physique" and "good health"(201) were all relevant, but according to Paton and Findlay, nutrition was something akin to "degree of fatness". Paton and Findlay referred to this as the difference between the "physiologist's" and the "clinician's" view of "nutrition".(202)

Nutrition as a bodily state figures less prominently in Cathcart's work. The 1924 "Report on the Nutrition of Miners and their families", was mainly concerned with dietaries, but heights and weights of the children were

measured, and one objective was said to be to

...relate these measurements (a) to the averages of the district... in order to determine how far their growth and nutrition coincide with, or depart from the normal...(203)

After this however there was little mention of the "nutrition" of the children, the discussion being carried on almost entirely in terms of weight and height. There was no discussion of means of assessment and similar terms were used in all Cathcart's surveys. We will see later, however, that from the mid-1930s Cathcart began frequently to make rhetorical use of the clinical concept of nutrition. Significantly, Hopkins and Mellanby, in their published work, never spoke of a general state of nutrition in terms similar to those used by Hutchison, Newman, Paton and Findlay.(204)

2.8. CHEMICAL PHYSIOLOGICAL STUDY OF NUTRITION.

In the 1911 edition of the Encyclopedia Britannica, Cathcart and Paton defined nutrition as the

...study of the way in which the tissues... obtain... material for growth and repair... energy for... work and heat production, and of the mode in which they get rid of... waste products... The study is... largely a study of the history of the food in the body since it is in the food that the necessary matter and energy are supplied.(205)

They went on to consider nutrition under the headings:

I. The Chemistry of Digestion; II. The Mode of Formation of the Digestive Secretions; III. The Mechanism by which Food Travels along the Alimentary Canal; IV The Absorption of Food; V Metabolism; VI Excretion.(206)

The article on nutrition in the 1929^{edition} of the Encyclopedia was written by Cathcart alone who explained that study of

nutrition demands:

...study of the methods by which... foodstuffs are digested, absorbed and utilised in the body and further how the waste products formed during the various tissue activities are got rid of, (207)

and ordered his material under headings almost identical to those employed fifteen years earlier. The metabolism of food was dealt with in similar terms to those of the previous article - the metabolism of fats, carbohydrates and proteins were considered in turn, and there was no mention of vitamins despite the general acceptance of their existence over the previous fifteen years. In a 1929 textbook Cathcart also defined "Chemical Physiology" which he said, was

...mainly concerned with the materials of which the tissues are composed and the results of metabolic changes which these materials and also ingested foodstuffs undergo. (208)

Comparing Cathcart's definitions of "nutrition" and "chemical physiology" it is clear that the two subjects had much in common and that they represented different aspects of (or even, to some extent, interchangeable names for), a single scientific enterprise. In addition, despite the differences between Paton and Findlay's, and Newman's views of nutrition as a bodily state, the chemical physiological view of the study of nutrition has much in common with Newman's clinical view. For Cathcart and Paton, the study of nutrition required study of the path taken by food through the various systems through which it is utilised, while, according to Newman, the clinical assessment of nutrition indicated the efficiency of the functioning of

:

these systems.

We have already seen that despite the challenge of Hopkins's new reductionistic biochemistry, Cathcart defended the concepts and methods of the old holistic chemical physiology. We will see now that despite the rise of the new reductionistic approach to nutrition, which followed the introduction of the vitamin concept, Cathcart pursued and promoted a distinctly holistic approach to nutrition.

From the 1910s one of Cathcart's major interests was in energy requirements, and in 1921 his appointment as chairman of MRC's "Committee on Quantitative Problems in Human Nutrition" was recognition of his success in this field. This committee was established after Major Greenwood, (209) a Medical Officer of the Ministry of Health complained to Fletcher that

...upon the more energetic side of nutrition, no new knowledge has been gained since the armistice. Work on Accessory Food Factors has been done... but when it comes to calories you have nothing...(210)

But Cathcart was also interested in the metabolism of the "proximate principles"- fat, carbohydrate and protein, (211) and was at pains, in 1922, to echo the argument which Hopkins presented against undue emphasis on energy, in the 1921 Huxley lecture: (212)

No one will... seriously maintain that nutrition can ultimately be reduced merely to the satisfying of energy demands: the calorie factor may be regarded as strictly secondary to the supply of material... Merely because... [calorie value] has proved of great utilitarian value there is no real justification for placing this standard as the foundation stone of hypotheses

framed to offer an explanation of cellular activity...(213)

However, although Cathcart acknowledged the importance of the "material" of the diet, and believed in the existence of vitamins,(214) he never conducted vitamin research and paid little attention to the vitamin content of diets. His dietary surveys were concerned with energy content, and with analysis in terms of the "proximate principles". Cathcart was not publicly involved with the rickets controversy of 1918 - 23, but over many years he consistently warned of the dangers of concluding too much from vitamin research. In the 1921 edition of Physiology of Protein Metabolism, he asserted:

...attempts are being made to convert a valuable and interesting field [vitamin research] into a happy hunting ground for the charlatan and manufacturer of proprietary remedies.(215)

Later criticisms of over-emphasis on vitamins, were linked to an assertion of a need for more attention to energy content and the "proximate principles". Concluding the vitamin section of his 1928 booklet on nutrition he commented:

...we are in danger... of ascribing properties and functions to an increasing series of unknown factors, and of postulating the presence of such or other unknown factors before we have exhausted the potentialities of the known.(216)

A further claim that vitamins had been over-emphasised was made in Cathcart's 1931 dietary survey:

The discovery of accessory food factors... has led to an immense development of studies applied to the qualitative aspects of nutrition... [which] has... tended to throw the study of nutrition as a whole out of perspective. Indispensable as the accessory substances may

be... they are factors which, though vital, are accessory... the determination of the calory [his spelling] value of a diet is the only present mode of estimating in gross the quantitative factors of nutrition...(217)

Cathcart set out his views in detail in a 1931 lecture on "The Foundations of National Diet". He proposed that the substances in food be divided into two groups - "Group A", consisting of protein, fat and carbohydrate, and "Group B", accessory substances, salts and water. He explained that

Group A substances... alone can be considered as direct sources of energy to the organism. Although there is no suggestion that the materials in Group B can contribute energy to the organism, we realise that without them those in Group A would not be available. It all comes back to a fresh restatement of the fact that the whole is greater than the sum of the parts.(218)

Cathcart said that following Hopkins's discovery there had been,

...a perfect flood of work, good, bad, and indifferent... So much is the balance upset... that one might gather from the writings of certain investigators that the only slogan necessary is "Take care of vitamins and the diet will take care of itself." ...I do not... believe that the average everyday diet is so deficient as to produce the astonishing results which one might deduce from experimental work on pure diets...(219)

Cathcart took a similar line when writing in the first number of "Nutrition Abstracts and Reviews" in 1931:

At the moment the quantitative aspect of nutrition seems to be devoid of interest to the majority of workers, and yet... it is the quantitative aspect which is of fundamental importance... But the old truism that the whole is greater than the sum of the parts is never more applicable than to the subject of nutrition.(220)

As Cathcart emphasised the inapplicability to humans of vitamin experiments using pure diets and experimental

animals, he also began to reject laboratory work as the basis of measuring energy requirements. He proposed instead that energy requirements could best be estimated from data produced by his dietary surveys. In contrast with Hopkins's belief in the irrational nature of traditional food habits, (221) Cathcart's belief in the basic reliability of the food habits of the people became a cornerstone of the rationale behind his scientific work. This is illustrated by a speech made in in July 1931, before a meeting of the Royal Sanitary Institute when he declared:

Although human experience cannot be absolutely relied upon, I am at one with those who believe that age old food customs cannot be lightly ignored... The object of dietary studies is to collect in a trustworthy fashion the essential information regarding the nature and amounts of food consumed and then to reduce to some sort of scientific accuracy these "fruits of colossal experience". (222)

In his article in the first number of Nutrition Abstracts and Reviews, after discussing previous estimates of calorie requirements, Cathcart continued

Experience of many years' work in the field of nutrition has convinced me that the only adequate mode of attack is by the collection of a sufficiently large number of family diets, and that these diets must be average diets in the population for whom it is determined to establish a standard. (223)

Cathcart gained international recognition for his work in this field, for in 1932 he chaired a League of Nations Committee which attempted to standardise methods. (224)

He planned a comprehensive series of dietary surveys on which he hoped to base new estimates of energy requirements, but his plans were drastically cut back due

to the financial stringencies of 1931.(225) Cathcart was disappointed with the support given to his research programme. In 1933, when he relinquished the chairmanship of the MRC Nutrition Committee, at a time when it was envisaged that its work, and that of the AFFC, would be absorbed by a new committee, he told Thomson, the assistant MRC Secretary,

I only hope [that] in the reconstituted Nutrition Committee due attention will be given to the broad quantitative aspect, an aspect which has never in this country excited much interest...(226)

Having discussed the Glasgow Group's, and more particularly Cathcart's approach to the study of nutrition, we will now consider their social thought with respect to nutrition.

2.9. THE GLASGOW GROUP'S "SOCIAL NUTRITION."

Nutrition, for Paton and Cathcart, had long been more than an academic study. In addition their interests extended to the social causes of and solutions to inadequate diets. A dietary survey directed by Paton in 1900, concluded that the

...rate of expenditure on food leaves an altogether too scanty margin for the necessities of life... [but] ...the steady, thrifty poor, .. would appreciate and would benefit by simple instructions on the rules of dieting.(227)

Similarly, a 1913 survey conducted under Paton concluded that while poorer people were inadequately fed

...bad marketing is one of the main contributing factors... proper training in cooking and marketing... [is] the best corrective.(228)

During the war, as a member of the Royal Society's Food

(War) Committee, (229) Paton participated directly in the application of nutrition to the welfare of the state, and after the war he advocated the formation of an "Inter-Departmental Council or Board on which... Departments... and scientific bodies... would be represented," (230) as a means of continuing this work. He suggested that the new organisation would:

(a) Survey the position of nutrition research questions, take note of the investigations in progress, of their interrelationships, and of the unused or prospective opportunities for fresh inquiry.

(b) Advise the appropriate administrative Government Departments and the Departments responsible for the distribution of Government Research Grants upon these questions, and to indicate the directions of work or the particular workers for the receipt of financial aid, with a view to the better promoting and co-ordinating of the scientific and national interests in nutrition.

(c) Promote a better understanding of nutrition questions for the general public. (231)

As Paton was the only scientist who made any effort to promote this scheme, it seems that while, at this time, he saw such a development as furthering his interests, his former fellow members of the Royal Society Committee, which included Hopkins, did not, and the proposal was taken no further. (232)

Although this proposal included the suggestion that one function of the new organisation would be in educating the public on matters of nutrition, Paton's earlier emphasis on the need for the education of housewives as a means of improving the diet of the poor was to a large extent displaced by emphasis on the influence of bad housing, as Paton became associated with Findlay's

opposition to dietetic theories of rickets. In 1908 when Findlay introduced his theory which emphasised lack of exercise he instigated education as a solution:

...by instilling this fact [of the role of lack of exercise in rickets] into the minds of mothers... rickets would undoubtedly become a very rare disease.(233)

But in Findlay's 1915 paper, his emphasis shifted from lack of exercise to lack of fresh air as the cause of rickets, and he began to stress the need to improve housing.(234) He soon began to argue against diet and for housing as factors in ill-health in general. In a 1917 paper entitled "Causes of Infantile Mortality", (235) he argued that the establishment of milk depots and ante-natal clinics had not been beneficial, and against level of wages and unemployment, and for education, inheritance and housing as important factors. To support the latter contention, he referred to the forthcoming report by Ferguson.(236) In the final chapter of this report Paton and Findlay argued that the link which Ferguson found between rickets and poor maternal care did not result from ignorance or indifference, but from unfavourable surroundings. They declared that if housing was improved, rickets would disappear.(237)

Paton and Findlay's views on the social origins of and the solutions to poor nutrition (in the sense of nutrition as a "bodily state") were most developed in their 1926 Report on "Poverty, Nutrition and Growth". They had devised means of assessing "maternal efficiency", "poverty", "underfeeding", and "overcrowding", and they concluded that

of these "maternal efficiency"

...seems to be more closely associated with variations in the condition of the child... [and] ...is not directly and immediately associated with "poverty" but is... to some extent, associated with... overcrowding... (238)

They suggested once again that improved housing might prove a beneficial measure but concluded that,

What is not demonstrated is that simple increase of income would be followed by improvement in the condition of the children. Bad parents, irrespective of their incomes, tend to select bad houses, as the money is often spent on other things. The saying that "What is wrong with the poor is their poverty" is not substantiated by these investigations, which show that the problem of a slum population is far more complex than such a statement would indicate.(239)

Cathcart's social thought was similar to that of Paton and Findlay, but for Cathcart education rather than housing was most important. This emphasis is apparent in one of the conclusions of the survey of miners' dietaries, published in 1924:

...there are variations of diet from district to district and within each district which suggests that housewives could be helped to secure a more adequate return for their expenditure by a better dissemination of knowledge both of the economic and hygienic aspects of diet.(240)

But in years to come various notions of "maternal" and "parental" efficiency, and education as a means of improving these factors came much more to the fore in Cathcart's work. In 1925 Cathcart became a Governor of the Glasgow and West of Scotland College of Domestic Science. Links between the Physiology Department of the University, and the "Do' School" continued for many years.(241) Later, Cathcart's wife became a key member of a "Voluntary Health

Visitors" organisation in Glasgow, one of the aims of which was to teach housewives how to cook and shop efficiently.(242)

Cathcart's 1931 dietary survey evaluated "maternal efficiency" using methods similar to those of Paton and Findlay. According to Cathcart, Paton and Findlay,

...made it plain that the only factor which really counts... is the capacity of the mother and the amount of time and intelligence she gives to the running of the home.(243)

Cathcart aimed to check if the conclusion applied to a better-off population. He also assessed the effectiveness of fathers, in which,

...attention was paid to general behaviour, habits, steadiness as a worker, expenditure on alcohol etc...(244)

and his conclusions emphasised "parental" rather than "maternal" efficiency:

We would not be inclined... to lay all the stress on the effectiveness of the mother although we freely admit that she must play a preponderating role... Rather would we say that the welfare and physical condition of the children is a function of parental efficiency.(245)

Cathcart reviewed his surveys, and discussed how "maternal efficiency" could be improved in a speech at the 1931 Royal Sanitary Institute Congress:

...there is fairly good evidence, that a section of the population is inadequately fed. But this... cannot simply be ascribed... to inadequate income... The fault lies much deeper. Bad buying and bad cooking account for a good deal. There is no use blaming these housewives. How can they be expected to exhibit faculties which they have never been taught... lessons in cooking are given... as a part of the school curriculum. But are the courses always adapted to the real conditions?... why not have as a basis a "one-pot, one small gas-ring" course?(246)

He also suggested cookery demonstrations at Infant Welfare Centres, arguing that,

A good practical demonstration... will be infinitely more successful than the distribution of masses of leaflets.(247)

Cathcart argued along similar lines on many occasions during the 1930s.(248) As well as advocating this kind of local educational, almost personal attention to the malnourished poor, Cathcart condemned "...promiscuous philanthropy which is... general not selective." which he described as "...a deadly menace to the state."(249) There was also, during the 1930s and 1940s an increasingly strong moralistic tone to his comments.(250)

Although the emphasis in Paton and Findlay's later work was on housing, while Cathcart's emphasis was on education, they all emphasised the complexity of the nutritional problems of the poor. The solutions which they offered also had another feature in common - by increasing "maternal efficiency" (by education or by improving housing) they aimed to strengthen the family.

Having now considered the approaches which the Glasgow Group took to the study of nutrition, and the application of nutritional knowledge, we will now move on to consider these aspects of the thought and practice of Hopkins and Mellanby.

2.10. THE NEWER KNOWLEDGE OF NUTRITION.

Hopkins first outlined the vitamin concept in a speech to the Society of Public Analysts in 1906,(251) in which his main purpose was to win recruits to the new approach to

the chemistry of life which he was trying to establish.(252) Six years later he published a paper in the Journal of Physiology entitled "Feeding Experiments Illustrating the Importance of Accessory Factors in Normal Diets."(253) Here he presented results which, he explained, were designed to quantify findings of earlier experiments conducted during the period 1906-7. He pointed out in a footnote that the results had previously been summarized in lectures at Guy's Hospital in June 1909, and had also been communicated to the Biochemical Club in October 1911.(254) Hopkins had shown that rats fed on a purified diet failed to grow, whereas those eating a small quantity of milk in addition, grew normally. In his "Final Discussion" Hopkins quoted from his earlier speculations made before the Society of Public Analysts, and concluded that the evidence was now sufficient to justify these views.(255) He was clearly making a claim of priority.(256)

According to Kohler,(257) Hopkins abandoned vitamin research after the war because he felt that the expense of the techniques(258) would prevent him from competing with others such as Chick and Harden(259) at the Lister Institute.(260) This opinion is however, only partially correct, for several reasons. First of all, Hopkins did not totally abandon vitamin research, and received funds from the MRC for an assistant to work on the subject over the following decades.(261) In addition, as chairman of the AFFC Hopkins maintained an important influence over the research on vitamins which was conducted by others. Before

the war Hopkins had already declared his primary interest in the development of biochemistry,(262) and during the war indicated that he thought that nutrition was a special area of this subject,(263) so it was not "after the war" that he made any decision. It is true that the techniques of vitamin research were expensive and Hopkins's resources were limited,(264) but Fletcher was pressing him to continue work on the subject.(265) More to the point is that the techniques of vitamin research were not designed to further the ends of biochemical research,(266) but were, in many respects, identical to the techniques of chemical physiology which Hopkins regarded as surpassed.(267) The development of biochemistry was better served by other experimental work.(268) A more complete interpretation than Kohler's might be that vitamin research promised to bear fruit for medical practice and public health, and the identification of vitamin research with Hopkins could further his interest in establishment of biochemistry. Hopkins therefore continued to be associated with vitamin research, without being heavily involved in it himself, even though the techniques used were not obviously "biochemical". As we have seen he presented the vitamin theory as an aspect of the reductionistic mode of thought which he advocated.(269)

In 1927, when Fletcher was attempting to provide a new impetus for MRC nutrition research,(270) he encouraged the implementation of a scheme of research which

...though under... [Hopkins's] general direction, might do effective and maintained work without

putting direct burdens upon him...(271)

This project later received financial support from the Sir William Dunn Trust and led to the foundation of the Dunn Nutritional Research Laboratory at Cambridge. L.J.Harris,(272) who had formerly worked in Hopkins's laboratory, was appointed senior research officer. Fletcher explained to Harris that:

It is the intention of the council that... the work should consist chiefly in the analytical study of the part played by vitamins in nutrition, rather than in the extension of the common empirical studies of the general results of vitamin presence or defect... While... the details of managing this group of studies should be left to you... Hopkins will give it all the advice and help in his power.(273)

But it was Fletcher himself, rather than Hopkins, who became most closely involved in supervising the work of the Nutrition Laboratory.(274)

Research in nutrition was much more important for Mellanby, than it was for Hopkins. He echoed Hopkins's emphasis on chemical composition of diets in 1922,(275) but his concerns were more practical than theoretical. As Professor of Pharmacology in Sheffield, Mellanby was not aiming to establish a school of biochemistry, but rather to pursue his own style of laboratory and clinical research.(276) Mellanby's version of the "new knowledge of nutrition" was closely related to his theory of rickets. Above all, he emphasised two points - that more fat-soluble vitamins, and less cereals, should be eaten.(277) He had identified low intake of fat-soluble vitamin, and high cereal consumption as factors in rickets in some of his

earliest work on the subject,(278) and later came to believe that decreasing cereal, and increasing fat-soluble vitamin consumption could prevent many other diseases too.(279)

2.11. HOPKINS, MELLANBY AND THE APPLICATION OF NUTRITIONAL KNOWLEDGE.

While for Cathcart, the basic reliability of traditional food habits was a cornerstone of the rationale for his scientific programme, in Hopkins's and Mellanby's opinions traditional food habits were frequently the result of superstition, were responsible for delaying the application of new knowledge by the general public and were often detrimental to health. Hopkins advanced this view when speaking on "The Practical Importance of Vitamins", in 1919:

In many departments of human knowledge the teaching and guidance of science are accepted as final because in these departments the knowledge arose in the first instance from scientific studies and from these alone. It is otherwise... in regions where mankind can claim abundant accumulated empirical experience... Science may explain that experience, but it is unlikely... to improve upon experience as a guide... This consideration, consciously or subconsciously, accounts, I think for a widespread feeling that the teachings of science about our food supply are of academic interest only.(280)

The rest of his paper was devoted to arguing that scientific study could "forestall experience, which is a much slower and more expensive teacher". Twelve years later Hopkins argued the same point, in his article "Nutrition and Human Welfare", in the first number of Nutrition Abstracts and Reviews.(281)

For Paton and Cathcart, the application of nutritional knowledge was a complex matter, and the means of application was a matter of definite concern to them. This is shown by their interest in, and their discussion of improving, "maternal efficiency". Hopkins and Mellanby, in contrast, in as much as they were interested in application, assumed the means of application to be relatively unproblematic, or at least not worthy of their detailed consideration. We have already seen examples of this in the AFFC memorandum for famine relief workers, and Hopkins's plea to doctors to pay attention to the possibility that patients' symptoms are caused by vitamin deficiencies.(282)

In contrast with Cathcart, who was actively involved with domestic science,(283) Mellanby took little interest in the subject when he was Professor of Physiology at King's College of Household and Social Science. He was so busy with research that he arranged for his wife to conduct some of his lectures,(284) and admitted to the principal in his letter of resignation in 1920,

As regards my own work I am only too aware of my many shortcomings both as regards teaching and running the department.(285)

When, in 1927, Mellanby read a paper which asked the question "What duties has the state in relation to the nation's food supply regarding research, instruction of parents, maintenance of supplies, and cooking facilities?",(286) he did not discuss how the state might most effectively apply the new knowledge of nutrition.

Rather he was concerned about the influence that a "Board of Nutrition" attached to the Ministry of Health, and consisting of, "active workers on nutrition", could have in "co-ordinating" research, educating medical officers, and controlling the activities of "health societies". (Mellanby's concern with "health societies" had arisen from their scathing response to his work on the harmful effects of cereals.(287) This work also brought him some unfavourable treatment in the press,(288) which was in marked contrast to the help which the press gave to the health crusade of the eminent surgeon Sir William Arbuthnot Lane, founder of the "New Health Society".(289) Lane's articles in the Daily Mail resulted in a donation to London University for the establishment of a Chair of Dietetics.(290) Mellanby successfully lobbied the Committee which chose the new professor in favour of his assistant S.J.Cowell,(291) and "against the appointment of R.H.A.Plimmer(292) who was a founder member of Lane's society.(293)) Mellanby suggested that the public could be educated, and the "health societies" could be controlled by the Ministry of Health issuing statements to the press, on the advice of the Board.(294)

Regarding the coordination of research Mellanby proposed that it would be the duty of the members of the Board to keep in touch with all active nutrition researchers and suggested that

Better co-ordination and more intimate knowledge of each other's work would not only result in more rapid progress, but would greatly reduce the hostility, too often encountered, where one group

of workers decries the results of another group.(295)

Mellanby spoke from his experiences in the rickets controversy. Regarding the application of research, Mellanby asserted that

...it is perfectly certain that knowledge of dietetics is greatly in advance of the application of this knowledge and the adoption of its teachings...(296)

and referred to his own work on cereals:

It is now five years or more since I published the fact that cereals, and especially oatmeal, will... interfere most potently with calcification processes and the general health, but those who realize the fact are few in number, in spite of the fact that the evidence is open to anybody to examine.(297)

As part of the remedy for this situation, Mellanby suggested that the Ministry of Health, guided by the Board of Nutrition, should

...assume greater control over the feeding arrangements in all institutions run by state aid.(298)

He foresaw alarm at this prospect among medical men responsible for such institutions but believed from his own observations that the proposed controls would be "highly efficacious in many cases".(299)

For Mellanby, the successful application of nutritional knowledge would be brought about if only the Government would heed and act upon the dietary advice which he had to offer, but not by the involvement of scientists like himself with activities such as domestic science.(300) But in "Duties of the state..." we can see that it was not just the application of nutritional knowledge that he was

interested in. Rather he sought to enlist the authority of the state as a means of facilitating his relationship with the public, with his fellow scientists, and with medical men, and therefore as an aid to his own professional advancement.

2.12. CATHCART'S AND MELLANBY'S APPROACHES TO NUTRITION AS CONSERVATIVE AND NATURAL-LAW STYLES OF THOUGHT.

In Chapter Three I will give an account of the activities of the Ministry of Health's Advisory Committee on Nutrition (ACN) which was founded in 1931 following a revival of Mellanby's proposals of 1927. I will argue that a series of clashes between the members of the ACN, during the earlier years of its activities, were essentially clashes between those who adhered to conservative and natural-law approaches to nutrition, Mellanby and Cathcart being the key advocates of each approach. The most important points that I wish to address in this last section of Chapter Two, are therefore, firstly the characterisation of Cathcart's and Mellanby's approaches to nutrition as conservative and natural-law in style, and secondly, the origins of these styles.

We have already spoken of Cathcart's chemical physiology as a holistic approach to the chemistry of life, and have pointed to the similarity between Cathcart's definitions of "nutrition" and "chemical physiology". We might therefore expect to classify Cathcart's approach to nutrition as a conservative style of thought. However, there is, at first sight, some difficulty with this

classification because Cathcart's interest in nutrition has often been described, by himself and others as an interest in "quantitative" aspects of diet,(301) and some writers who have drawn on Mannheim's work have referred to "quantitative thinking" as a trait of natural-law thought.(302) A similar problem exists when we consider the classification of Mellanby's approach to nutrition. We have associated Mellanby with Hopkins and Hopkins with a reductionistic approach to the chemistry of life. Mellanby's approach - and the "new knowledge" in general - has often been characterised as an approach in which the qualitative factors of the diet are emphasised,(303) and some writers have referred to "qualitative thinking" as a feature of conservative thought. If we are to make a case that the thought of Mellanby and Hopkins and the Glasgow group can be consistently classified according to Mannheim's dichotomy, (this would be convenient although there is of course, no a priori reason why it should be the case), then this is a problem which must be resolved. It is however an easily resolved problem if we refer to Mannheim's original characterisation of conservative and natural-law thought.(304) Here we find that Mannheim spoke of conservative thought's "emphasis on the qualitative" in order to contrast it with natural-law thought's "claim of universal validity" for every individual.(305) If we bear this in mind Cathcart's approach to nutrition can readily be seen as exhibiting a conservative style. Firstly, in

Cathcart's Nutrition Abstracts and Reviews article he explained that his method of estimating energy requirements would provide an estimate "...for the population for whom it is determined to establish a standard", (306) and not for human beings in general. Cathcart's unwillingness to make claims of "universal validity" is also illustrated by his introduction to the report of a League of Nations Conference which he chaired in 1932. The Conference had attempted to establish an agreed scale of "family coefficients" (307) for use in dietary surveys. Such coefficients were fractions assigned to women and children which allowed the "man-values" (and energy requirements) of families to be worked out. Cathcart stated:

...it is quite impossible... to draw up a set of coefficients representing absolute values, because (a) the scientific data available are not adequate... and (b) an absolute standard for one country would probably not be absolute for another...(308) .

Similarly, in November 1931, when Cathcart was commenting to an official of the Ministry of Health on his own scale of "family coefficients" he stated:

...it is not, we regret to say, perfect - it is perhaps even absurd even to think of aiming at perfection in such a matter. (309)

Cathcart's position then, was one of opposition to claims of universal validity. Another similar feature which marks Cathcart's approach to nutrition as a conservative style of thought is his insistence that the results of animal experiments with purified diets should not be applied to people. Cathcart's "quantitative" approach referred to his interest in calorie requirements which he presented as a

means of assessing the whole of the diet, counterposed to the reductionistic emphasis on vitamins. Other features which mark Cathcart as a conservative thinker are his method of estimating calorie requirements which relied upon an assumption of the basic reliability of traditional diets, his emphasis on the complexity of the problems of the poor, and his emphasis on strengthening the traditional institution of the family by means of education.

Cathcart's approach can then be seen to contrast with Mellanby's "claims of universal validity" which cast Mellanby as a natural-law thinker. In contrast to Cathcart, Mellanby found the applicability of the results of animal experiments to humans relatively unproblematic, and again, in contrast with Cathcart's emphasis on education and the complexity of the problems of the poor, Mellanby was not interested in education and assumed that nutritional deficiencies could be predicted and prevented in all populations by the application of a few simple principles.(310)

In Chapter One it was stated that the characterisation of the thought of early twentieth century nutrition scientists into conservative and natural-law styles would draw attention to parallels broadly in agreement with the hypothesis with which MacKenzie concluded his thesis.(311) Before moving on to Chapter Three, a discussion of the origins of Mellanby's and Cathcart's styles of thought will help to make clear those parallels.

In view of our discussion of long-term trends in

Scottish and English Physiology, and Paton's and Cathcart's positions as successive Regius Professors of Physiology at Glasgow University, we may regard them (echoing MacKenzie) as members of a threatened elite, and their interests, as MacKenzie suggests might be the case found expression in a conservative style of thought. Specifically we might suggest that Paton's conservative style was sustained by his close association with holistic clinical medicine, the authority of which, during the early twentieth century, faced the challenge of various reductionistic and professionalising biomedical scientists.(312) Paton attempted to use his close association with clinical medicine (illustrated by his relationship with Findlay) as a source of advantage in the rickets controversy. The specific professionalising biomedical researchers who he (and Findlay) faced in the rickets controversy were Hopkins and Mellanby. Victory in the controversy for Paton would help him to resist the relative decline of Scottish (or rather more specifically, Glaswegian) physiology, while victory for Hopkins and Mellanby would help them to establish their new reductionistic approaches to the chemistry of life and to nutrition, and new ways of relating to the medical profession. While Hopkins aimed to establish an autonomous discipline of biochemistry and Mellanby was concerned with more practical matters, and engaged in both clinical and laboratory work, they both claimed a position in which their views as researchers would be treated as worthy of special consideration by the

medical profession.

Cathcart's position with respect to the medical profession, is, as mentioned earlier, rather more difficult to characterise. However, like Paton, Cathcart always showed respect for clinicians, and under his leadership the Physiology Department continued to be involved in the education of medical students and clinically-orientated research.(313) But Cathcart in his own scientific work, maintained a respectful distance from clinical matters. His criticisms of mechanistic approaches to the chemistry of life, and of over-emphasis on vitamins were all made on a very general level. They were not made, like Paton's remarks about the achievements of the "scientific physician" as opposed to the "laboratory worker" to further an interest in competing with reductionists in clinically-orientated research work. Cathcart's criticisms of "mechanistic" approaches were rather aimed at providing a rationale for his own particular scientific work which was directed elsewhere. Instead of directing his efforts towards clinical medicine like Paton, through his work on energy metabolism and requirements Cathcart found an alternative, (and, in Britain, unique) niche in his holistic and non-technocratic forms of "military physiology", industrial physiology, and nutrition. All this work was "whole-body" physiology which sustained his conservative approach despite, (in comparison with Paton) his relative distance from clinical medicine.

In summary we may say that the style of thought of

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Glaswegian physiology during the eras of Paton and Cathcart was originally sustained by a close relationship with clinical medicine. Cathcart, in his own work eased away from clinical medicine, but we will see in Chapter Three that in the late 1930s he was able to seek the advantage in controversy, just as Paton might have done twenty years earlier by aligning himself with conservative elements in the medical profession and emphasising his respect, and his opponents' lack of respect, for clinical judgements.

CHAPTER THREE: NUTRITION AND GOVERNMENT: THE CASE OF THE
ADVISORY COMMITTEE ON NUTRITION.

3.1. INTRODUCTION.

The story of the ACN, may be divided into five phases- 1) foundation during 1931; 2) initial activities January-November 1931, during which time two memoranda were prepared for the guidance of medical officers of health; 3) November 1931- July 1933, during which lack of consensus resulted in two of the three major items of business being abandoned (consensus regarding a third item was only partial); 4) July 1933 - 1934 during which a vigorous political controversy arose due to a BMA report on nutrition which used energy and protein requirements which differed from those used previously by the ACN; 5) 1935 - 1939 during which the ACN was reconstituted and embarked upon a large survey which was never properly completed.

I will show that the divisions which soon emerged during the activities of the ACN were, like the divisions discussed in Chapter Two, divisions between conservative and natural-law thinkers. In the first three phases the divisions were essentially those which have already been noted between Mellanby and Cathcart. During the last phase Cathcart adopted the clinical concept of nutrition, Mellanby, now Secretary of the MRC, maintained a lower profile, and Cathcart's main opponent was the much more overtly political John Boyd Orr, Director of the Rowett Research Institute near Aberdeen.(01) Due to these conflicts the establishment of the ACN failed to advance

the institutionalisation of nutrition as Mellanby had hoped in 1927.(02)

3.2. THE FOUNDING OF THE ADVISORY COMMITTEE ON NUTRITION 1930-31.

Following the publication of Mellanby's 1927 speech to the BMA, he visited the Ministry of Health and submitted a statement which reiterated his proposals for a "Board of Nutrition". He stressed that consensus had been achieved regarding the value of vitamins:

All scepticism as regards the importance of these substances in the maintenance of good health has now disappeared (except probably in Glasgow)...(03)

and reviewed the role of nutrition in rickets, dental caries, scurvy, anaemias, neo-natal death, diseases of pregnancy, and enlarged tonsils and adenoids. He boldly declared:

It is now in fact recognized that the key to a high standard of health is held by correct feeding and that many of the ills of civilisation are to be explained on the basis of improper feeding.(04)

Newman told Mellanby that a Board of Nutrition was out of the question because "Boards of Prison Commissioners and Control Boards are not beloved of Government", and that an Advisory Committee was all that could be expected,(05) but there are no records of any further discussions about the formation of such a Committee until early 1930. One reason for Mellanby's frosty reception is probably that while his speech envisaged a wide-ranging role for the government in nutrition, it was Newman's belief that the government's role in nutrition was necessarily restricted.(06) In

addition, while Mellanby poured scorn on "health societies", Newman praised such organisations.(07) The contrast between Mellanby's and Newman's views is illustrated further by Newman's advocacy, in his 1928 Hastings Lecture, of a concept of nutrition in which food was but one of six "elements".(08)

The idea of forming an Advisory Committee appears to have been revived in February 1930 by Sir Arthur Robinson, the Permanent Secretary when he told Newman:

I think the time has now arrived for us to consider this question of appointing an advisory committee to assist... in regard to a general movement for disseminating knowledge and improving practice as to food.(09)

Newman asked Dr.T.C.Carnwath, Senior Medical Officer of the section of the Ministry which included nutrition in its remit,(10) to consider the possibilities. Carnwath advised that an advisory committee could

...not only... present the new teaching in a popular form, but [could]... also explain to the people in a practical way how it can be applied to their domestic life...(11)

Carnwath wanted to see

...a superior sort of Health Visitor with special training in nutrition... whose duty it would be to familiarise herself, by visits to the home or by talks at the clinic, with the food habits of people in the district; find out in what respect the diet is defective; show how, by slight modification of existing practices, it can be improved and how, without adding greatly to the cost and with the appliances available in the poorest home, the food can be made more palatable and nutritious.(12)

In 1927 Mellanby had suggested the Committee could consist of himself, Hopkins and Chick,(13) but Carnwath wanted "practical people":

We do not need a large number of pure scientists. Some preliminary enquiries... make it clear that there are great differences of opinion among experts and all of them do not see eye to eye with Professor Mellanby. It would, indeed be easy to select a Committee the elements of which would neutralise one another, so that in our selection we shall have to take the risk... in coming down on the side of those with a positive policy.(14)

Robinson encouraged Newman to reach conclusions about the desirability of a nutrition committee quickly,(15) but it was not until October that Newman consulted another colleague on the subject.(16) J.N.Beckett,(17) an assistant secretary, thought that existing ad hoc arrangements for nutritional advice were satisfactory(18) but suggested

...if we are to engage in an educational crusade it would be preferable that we should be fortified by... outside advice so as to minimise the amount of criticism which can be directed against the department... It would also be of advantage to the Minister when making statements on dietetic matters if he could cite as his authority a Committee of recognized experts instead of unnamed officers of the Department.(19)

Beckett's colleague, Mr. Machlachlan,(20) agreed and, like Beckett, stressed to Newman that the purpose of the Committee should be to advise the Minister, rather than the Public or the Local Authorities.(21)

It would seem that Newman and Robinson's assistants, Carnwath, Beckett and Machlachlan, had little enthusiasm for Mellanby's original ideas. Carnwath's vision of what was needed was more akin to the views of Cathcart, than of Mellanby. While Mellanby in 1927 appears to have been concerned with how the Ministry might be able to facilitate his own relationship with the public,(22) Beckett seems to have been concerned with how "outsiders" might facilitate

the relationship between the Ministry and the public. When Robinson proposed the appointment of an Advisory Committee on Nutrition to the Minister later in October 1930, however, it appears that he intended that the Committee would carry out activities very similar to those envisaged by Mellanby in 1927.(23) He explained:

Most people... feel that there is a long time lag between the results of research into foods and the adjustments in our dietaries and way of living which should be based on them. Such adjustments are of course always slow in an old and conservative country. Therefore the sooner we can start preparing people for them the better. One way will be through press publicity. Another way is by the action of Local Authorities on materials supplied by us. A committee... with strong outside representation is the best way of getting what is wanted into shape...(24)

Robinson's proposal was approved promptly, and there is no evidence that the Minister found it in any way problematic.(25) The final arrangements were left to Newman. Regarding the terms of reference, he favoured "to advise upon the practical advances in the knowledge of nutrition", which had been suggested by Carnwath.(26) Newman suggested to Robinson, that Major Greenwood,(27) Hopkins, Mellanby, Cathcart, V.H.Mottram,(28) (Mellanby's successor at King's College of Household and Social Science), and Jessie Lindsay, (Head of Household Arts at King's College of Household and Social Science), be invited to become members of the Committee. Of these, he suggested that either Greenwood or Cathcart be made Chairman.(29) This list of names became the membership of the Committee, and Greenwood was made Chairman.(30) Greenwood had been a Medical Officer of the Ministry until 1927, when he became

Professor of Epidemiology and Medical Statistics at the London School of Hygiene and Tropical Medicine, but was still closely involved with the Ministry and after his resignation he continued to conduct the Ministry's medical statistical investigational work.(31)

Greenwood had already worked closely with Cathcart on several projects. As already mentioned, it was Greenwood who prompted the establishment of the MRC's Committee on Quantitative Factors in Human Nutrition, of which Cathcart became Chairman.(32) Greenwood had also worked with Cathcart on the energy requirements of troops,(33) and had co-authored Cathcart's first MRC dietary survey.(34) Mottram shared some background and interests with both Mellanby and Cathcart. Like Mellanby, Mottram was a product of Trinity College, Cambridge, and like Cathcart he spent a short period of study under Voit in Germany(35) but unlike both of them he was not medically qualified. Mottram was fully convinced of the importance of the vitamin content of diets,(36) but in common with Cathcart, and in contrast with Mellanby, Mottram showed considerable enthusiasm for domestic science.(37) Like Cathcart he participated in popular educational activities, and before the first meeting of the ACN, he sought the assurance of the Minister that his membership would not bar him from continuing with this:

I assume that the appointment by no means debars me from what I have been accustomed to doing - when asked - viz deliver public lectures and write popular articles for the press on the subject of diet.(38)

Mottram was told that he would be able to continue these activities, but that it would be unwise to refer to the work of the Committee in lectures or articles.(39)

The membership of the Committee appears to have been the choice of Newman. Newman would certainly have been aware that he was appointing a committee which would be unable to reach many unanimous conclusions. He had been advised by Carnwath that such a committee could easily be appointed.(40) He would also have been aware that Cathcart did not share Mellanby's enthusiasm for vitamins. Newman's choice of members for the Committee, may have arisen from a concern to minimise the "risk" which Carnwath, and possible "criticism" that Beckett, spoke of.(41)

3.3. EDUCATING MEDICAL OFFICERS OF HEALTH; THE FIRST TWO MEMORANDA OF THE ADVISORY COMMITTEE.

The first meeting of the Committee, in January 1931, was addressed by Robinson, who referred to "ill informed" advice in the press, and suggested:

...one of the purposes of the Committee would be to tender to the Minister authoritative information on food questions that could be passed on to the public through suitable publicity channels.(42)

He suggested that another field of activity could be

...investigation of dietaries in institutions... [which] were generally... monotonous and no doubt could be greatly improved.(43)

Carnwath, who attended the meeting with his deputy Dr.J.M.Hamill,(44) developed this idea during the discussion. The Public Assistance Order 1930(45) had required medical officers of childrens' homes to provide

reports on the basis of which the Poor Law Authorities would prescribe the childrens' diets. Carnwath therefore proposed that the Committee investigate and make recommendations concerning diets in Poor Law Childrens' Homes:

...if the Committee could deal with this problem it would be of immediate help to the local Authorities and by securing their interest would go far to obtaining their co-operation in the larger question of educating the general public.(46)

Carnwath's proposal was accepted, it was decided to prepare a memorandum, and a Medical Officer of Health, G.F.Buchan of Willesden, was added to the Committee to help with this project.(47) A subcommittee of Mottram, Lindsay, and Buchan was appointed to visit childrens' homes. The diets in the homes were examined by Mottram and Lindsay and the nutrition of the children was assessed clinically by Buchan.(48)

At the second meeting, in May 1931, it was decided that the memorandum, already drafted by Mottram,(49) should include estimates of costs of the diets. This suggestion originated in a memorandum from the Ministry to Greenwood, advising him about the business which would be brought before the meeting.(50) In view of the number of enquiries from the Medical Officers of institutions, it was also decided to set up an Institutional Diets Sub-Committee. The first meeting of this Sub-Committee, attended by Buchan, Lindsay and Mottram, with Hamill and Hudson of the Ministry,(51) decided that it was impossible to continue giving individual attention to institutions. Instead it was

agreed that

...something in the nature of standard dietaries for a normal man doing an average day's work might be constructed and the necessary or desirable variations... indicated by various annotations...(52)

Greenwood approved this,(53) and three and a half months later the Institutional Diets Sub-Committee had before it a draft memorandum entitled "The Criticism and Improvement of Diets" by Mottram, which, with minor amendments, was approved.(54) Copies of "Criticism and Improvement of Diets" and "Diets in Poor Law Childrens' Homes", were circulated to the ACN members before they were approved at its third meeting, in November 1931.(55)

Judging by the minutes, Mellanby appears to have had little active involvement in the early work of the ACN. Cathcart was more active, and the records show that he opposed the emphasis on institutional dietaries at the first meeting. He asserted that "generally, persons in institutions were fed much better than many persons outside"(56) and urged instead that the Committee should "do something for the really poor people who at present lived in many cases on bread and ready cooked food."(57) Cathcart was therefore asked to prepare a memorandum on

...the conditions which exist and the difficulties which occur in the homes of the really poor so far as food is concerned.(58)

Cathcart's memorandum, circulated in early April 1931, argued that the ill-fed were not to be found in institutions; rather they were

...those who are unable to earn a sufficiently large wage... or those who earn a sufficient wage

and waste the major portion of it on alcohol and other luxuries... Most of the women in those households with poor diets are not only bad buyers but having purchased the materials their presentation of them as food falls short of the idea...(59)

He criticised existing domestic science teaching in terms identical to those we have already noted in his published work,(60) and declared that

...until we can educate our less well situated sisters there is no use in devising the most excellent of dietetic scales for wholesale distribution. It is relatively easy to draw up ideal and even cheap menus... but unless they are to remain but ornaments... we must assure ourselves that those we wish to help are capable of making proper use of them.(61)

The second ACN meeting expressed general agreement with Cathcart's memorandum, and it was decided to consult the Board of Education concerning existing facilities for cookery and domestic science teaching. An enquiry in which witnesses would attend meetings and give evidence was envisaged.(62) However at the following meeting, in November 1931, it was reported that the Board of Education had been asked to prepare a memorandum, but this had not been forthcoming. It was decided that since the Committee had been instructed to economise due to the financial crisis(63) no immediate further action could be taken.(64) Cathcart was not present at this meeting, at which "The Criticism and Improvement of Diets", and "Diets in Poor Law Childrens' Homes" were approved, but he wrote expressing agreement with both memoranda, describing the former as "most useful and interesting."(65) Nevertheless, a few days later, Cathcart wrote privately to Carnwath to warn him of

possible damaging political consequences of "The Criticism and Improvement of Diets". Carnwath reported to Newman that Cathcart thought the dietary standards suggested were

...an admirable ideal to work to, but fears its economic implications. The diet recommended... is something much better than the average working man can afford, and he [Cathcart] is afraid that if it is embodied in an official document it may be seized upon by transitional beneficiaries and others as a yard stick to measure what their allowances should be.(66)

However, Carnwath advised Newman that the recommendations differed little from the dietaries currently used in institutions, and went on to give his view on the way opinions were divided on the committee:

...there appears to be two main schools of thought, of which one, as represented by Cathcart, claims, broadly, that if we can ensure a sufficient quantity of food for each individual we may safely let the quality look after itself. The other represented by Mellanby, lays the emphasis on quality, particularly at times when the organism is subjected to severe stress.(67)

Carnwath was obviously referring here to Cathcart's concern with the calorie content, and Mellanby's concern with the vitamin and cereal content of diets.(68) So while at first sight the preparation of the first two memoranda appeared to proceed fairly smoothly, apart from Cathcart's fears of political repercussions, there was evidently sufficient discord for Carnwath to discern the differences in the approaches of Mellanby and Cathcart. But the activities of the ACN during its first year of existence did not advance the causes of either of our key actors. As we have seen, at the outset Cathcart was dissatisfied with the direction taken by the committee, and although Mellanby had expressed

a desire to educate medical officers in nutrition at the 1927 BMA meeting,(69) the memorandum on Childrens' Homes embodied, to some extent, a clinical concept of nutrition(70) and contained no clear statement of Mellanby's version of the new knowledge.(71)

3.4. NOVEMBER 1931 TO JULY 1933 - MRC NUTRITION RESEARCH, DIET AND DENTAL DISEASE, ADVICE FOR THE PUBLIC.

The divergent views regarding the importance of the vitamin content of the diet and the appropriate mode of operation for the Committee continued during the second and third years of its activities. The Committee considered three main issues during this period: the practical importance of MRC nutrition research; diet and dental disease; and the possibility of producing memoranda on nutrition for the guidance of the general public. Formal discussion of the latter two issues was conducted exclusively by post, as the Committee did not meet officially between February 1932 and July 1933.(72)

During the discussion of the first major issue, (the practical importance of MRC nutrition research), most ACN members were agreed on all points - the sole exception being Cathcart, who blocked consensus regarding the value of the anti-rickets vitamin. On the matter of diet and dental disease, opinion was less sharply divided. Most significantly, we will see that Mellanby received little support for his views, and by the time the idea of producing memoranda for the general public was discussed, he was pessimistic about the chances of the Committee

agreeing on anything. Cathcart opposed the latter proposal on grounds similar to those upon which his opposition to the original activities of the Committee had been based.

At the November 1931 meeting, after "Diets in Poor Law Childrens' Homes" and "The Criticism and Improvement of Diets" had been approved, and during discussion of a proposal for a pamphlet on "Adult Nutrition", Greenwood intervened with a prepared statement:(73)

A charge has been brought against the Ministry... [that] over a series of years the MRC has financed researches into the physiology of human nutrition, that those researches have brought to light facts not only of intellectual interest but of direct practical importance and yet the Ministry of Health has taken no steps, whether by administrative action or propaganda to make this knowledge available to the public advantage.(74)

Greenwood told the meeting that he was unable to reveal the source of the charges,(75) but assured the committee that they had come from someone with knowledge of the scientific literature. He continued,

I think... it is the duty of the committee to reach a decision as to which of the results of research... may be considered of immediate practical importance.(76)

It was decided that Mottram would prepare a memorandum, which was to be circulated and discussed by Hopkins, Cathcart and Mellanby, before the fourth meeting in February 1932. Mottram reviewed all the MRC reports on nutrition, and in conclusion he made five points: (1) that food intake of adult males should contain 3,000 calories; (2) that there need be no alarm if the distribution of the 3,000 calories between protein, fat and carbohydrates departs from the accepted norm; (3) that milk consumption

at one pint per day improves growth, health and spirits of growing children, and that the production and consumption of milk should be encouraged; (4) that increased intake of calcium and vitamin D (the anti-rickets vitamin) would reduce the incidence of rickets and dental disease; and (5) that addition of iron to artificial baby milk or dosage with iron would reduce anaemia in artificially fed babies.(77)

Cathcart was not present at the fourth meeting but sent a letter commenting on Mottram's memorandum:

The number of positive recommendations which... the committee can make is not great... Except for conclusion number 4 Mottram has been most judicious... As regards number 4 I do not think the evidence yet available permits of this dogmatism although I believe there is much to be said for the conclusion. I do not think the committee would be justified in, so to speak, broadcasting this finding for general use; would not be justified for example in recommending an issue of ergosterol [a form of vitamin D] by the Local Authorities to their Infant Welfare Centres.(78)

It was decided that Greenwood would prepare a memorandum for the Minister including the five recommendations with a note of dissent by Cathcart. Regarding vitamin D the memorandum read:

The experimental evidence supporting the conclusion that rickets and dental disease can be mitigated or prevented by an adequate supply of Vitamin D and calcium rich foods... is so cogent that it would be proper... to call the attention of the Local Authorities to the results obtained in Sheffield, Birmingham...(79) and elsewhere, and to state that, in the view of the Department, these results should be applied.(80)

Cathcart's note of dissent read:

I dissent from the use of the word "cogent"... I think the evidence interesting and very

suggestive, but it is not irresistible and conclusive in my opinion.(81)

Carnwath commented to Beckett and Newman:

...I have difficulty in understanding Professor Cathcart's objection... From the conversations I have had with him, I believe his objections are fundamental rather than specific. He simply does not believe that the cure for our national ills is to be found in iron pills, pellets of radiosterol, [a form of vitamin D](82) and daily spoonfuls of cod liver oil and his cautious mind is offended by the extravagant and sometimes premature claims that are made by his fellow workers in this field or on their behalf. When he comes to the bedrock of everyday experience he finds large numbers of families in poor circumstances in Scotland arriving at vigorous mental and physical maturity on a diet that by most standards of modern research appears to be deficient in both quantity and quality. Professor Cathcart would approach the problem from a different angle by a closer study of the dietetic habits of the people, by correlating the information thus obtained with the health of the persons concerned, and finally, by attempting such re-adjustments of the ordinary diet as will secure a proper balance. Work on these lines has been started in Dundee, Reading, Cardiff and elsewhere.(83)

The recommendations of the Committee, including Cathcart's note of dissent, were embodied in a Circular (Circular 1290) which was issued soon afterwards to Local Authorities.(84)

We have seen then, in the account of the episode just related, that the dichotomy between Mellanby and Cathcart which we established in Chapter Two, and which Carnwath discerned during the second phase of the ACN's activities, prevented consensus during the third phase. However, Mellanby continued to use the Committee to promote his views of the importance of vitamins, and at the February 1932 meeting, when Mottram's review of the MRC nutrition

research was discussed, it was decided that Mellanby and Mottram would prepare a memorandum on diet and dental disease which would include references to non-MRC research.(85) The value of vitamin D for the prevention of dental caries had long been an important component of Mellanby's thought,(86) and his wife, May Mellanby had conducted extensive research on the subject. The memorandum seems to have been prepared by Mottram alone, and was not completed until ten months later, when it was circulated to the committee.(87) Meanwhile the Ministry had already issued Circular 1290 which included the item (disputed by Cathcart) which stated that by increasing vitamin D and calcium intake would reduce dental disease as well as rickets.(88)

Four days after Mottram's draft memorandum was sent to the ACN members, it was criticised in a circular by Greenwood: "The document is altogether too ecstatic for my taste and I am quite sure that a critic with a hostile spirit could make a very damaging attack on it."(89) Comments on Mottram's memorandum and Greenwood's circular were collected and circulated at the end of March 1933. Buchan thought that Circular 1290 obviated any need for further action, and Mottram agreed with this. Cathcart agreed with Greenwood, while Hopkins "largely agreed" with Greenwood. Mellanby however thought that Mottram's memorandum "expresses the main points very clearly..." but he concluded his letter: "However I have written on this subject ad nauseam and I do not think that the committee

want to hear any more from me." (90) Mellanby was evidently becoming frustrated with the lack of progress of the committee.

The proposal for the preparation of memoranda for the public was made by Buchan, (91) and comments on the suggestion were summarised and circulated in March 1933. Mottram commented "I have always imagined... that it should be a function of the Advisory Committee to arrange for a wider publicity of the results of research in nutrition." (92) But Mottram thought that only slogans such as "Use more milk, it makes you grow" on the wireless or in tabloid newspapers would be effective. Lindsay agreed with Buchan's suggestion, and stressed, like Mottram, that any advice should be simple and practical and aimed at women rather than Medical Officers of Health. Hopkins also agreed with Buchan's suggestion, but he thought that the difficulty would be in "...saying enough to be useful and yet not more than is justified by present knowledge." (93) Hopkins, it seems, was becoming increasingly cautious. Cathcart, however, bluntly opposed Buchan's suggestion and again advocated his conservative approach:

I do not believe such a booklet will help. The people who ought to read such publications and who require advice would not trouble. The only way to tackle the distribution of such information is by practical methods. Demonstrations of cooking, buying etc., by skillful and sympathetic instructors well endowed with commonsense and a genuine knowledge of the limitations, mental and material of their audience. (94)

Mellanby was pessimistic. He wrote that if the committee were unable to agree about the influence of nutritional

factors on the teeth, then "...it seems... hopeless to expect a unanimity on a memorandum of wider scope, as suggested by Dr. Buchan, unless, of course, it is meant to consist of harmless generalisations." (95) Mellanby seemed then, to be giving up the hope which was implicit in his 1927 BMA lecture that an organisation of nutrition experts could further the cause of his reductionistic approach to nutrition.

Buchan's proposal was discussed at the fifth ACN meeting, in July 1933 (the first meeting for fifteen months). After reflecting upon the others' comments Buchan "...came to the conclusion that... Health Departments [of local authorities] had already ample material on which to offer advice..." (96) It was agreed to take no further action on the matter. At this meeting it was also formally decided to drop the idea of producing any publication on diet and dental disease.

3.5. JULY 1933-1934: INTRODUCTION; MEASURING MALNUTRITION; EDUCATING THE POOR.

Introduction

During the early 1930s nutrition and malnutrition had sometimes been public political issues, (97) but this had had little effect on the activities of the ACN. From early 1933 however, nutrition became a much more prominent issue in British politics, and during the year following the July 1933 meeting this was to have dramatic effects on the business of the ACN. (98) The problems which occurred over this period eventually led to Greenwood's resignation, and

Mellanby, evidently frustrated by the ACN, found an alternative opportunity to propagate his views through his membership of the Economic Advisory Council. These events led to the reconstitution of the Committee in 1935.

At the July 1933 meeting, the ACN unanimously agreed, during a discussion introduced by the Ministry, that it was desirable to devise physical criteria of malnutrition in order to standardise and overcome the vagaries of clinical diagnosis. The Ministry's interest in such a project arose because of the scope for political criticism that the variation in the nutrition statistics allowed.(99) However, a project which was conducted on the advice of the ACN, and which, it was hoped, would define such criteria, led only to a very minor advance on the existing highly subjective methods.

Further business before the July 1933 meeting included consideration of the "Hungry England Report" of the Weekend Review(100) which had been prepared following a debate in the journal about whether the unemployed could afford to buy sufficient food.(101) Discussion of this matter led the ACN to start producing schedules of recommended diets.

The debate of early 1933 about the dietary problems of the unemployed also resulted in the BMA appointing a Committee to look into the matter.(102) The BMA report, published in late November 1933,(103) used standards for protein and energy consumption differing from those used in the Advisory Committee's memoranda and the subsequent political controversy eventually led to the shelving of the

Advisory Committee's schedules of recommended diets.

In order to defuse the controversy which followed the publication of the BMA's report, the Ministry of Health arranged two conferences between representatives of the ACN and the BMA's committee. Of the members of the ACN, Cathcart was the most indignant with the BMA for contradicting the ACN's dietary standards. This is unsurprising because, as we have seen, energy requirements were Cathcart's special area of concern. The other members of the ACN were much more willing to reach a compromise, and without the consistent support of his ACN colleagues, Cathcart was unable to maintain his position that only complete surrender by the BMA would be satisfactory. Eventually a "nutrition agreement" was negotiated, which was based on an emphasis on the unreliability of using average figures for the nutritional requirements of individuals. This agreement appeared to concede much to the BMA.

Over the same period, the Advisory Committee also became involved in a project which attempted to apply Cathcart's approach to the improvement of the diet of the poor. This project was organised by a Medical Officer of Health, Dr. Elwin Nash, who aimed to teach efficient cooking methods and shopping to the poor in his area. This project, however, was also partly thwarted by political problems.

Measuring Malnutrition

The agenda of the Advisory Committee meeting of July 1933 included an item entitled "Physical Criteria of

Malnutrition" and the minutes record that this topic was introduced by Hamill, who explained the Ministry's need for a new method of diagnosing malnutrition. It was recorded that he said,

...it is sometimes stated in the reports of Medical Officers of Health that no signs of malnutrition had been observed but that there might be decreased resistance which would show up eventually. In other reports it was stated that signs of malnutrition had been noticed, that the children were off-colour, were dull at school etc. In a third group of cases it was said that malnutrition was probably present though no definite signs could be found.(104)

The Committee unanimously agreed that new methods of diagnosing malnutrition were needed and H.E.Magee,(105) a medical officer who had recently been appointed to the Ministry to give attention to questions concerning nutrition,(106) was asked to consider the matter.(107) This led to an enquiry conducted by Dr.R.H.Simpson,(108) a School Medical Officer of London County Council, under the auspices of the Ministry and the Board of Education.(109) Simpson prepared a report in March 1934, which was circulated in strict confidence to the members of the ACN in May.(110) Schoolchildren were examined in eleven areas and it was found that the results did not "...confirm the striking variations in the incidence of malnutrition which have been reported..."(111) in the annual reports of local Medical Officers of Health. Simpson suggested that the wide variation in the percentages of children suffering from malnutrition reported in different areas could be explained in four possible ways:

- (a) The use of different criteria in assessing

malnutrition.

(b) Variations in the extent to which the children are referred by the inspecting Medical Officers [i.e. Medical Officers who inspect schoolchildren] for observation and treatment.

(c) Inconsistencies in the methods of recording results of inspections on the medical cards.

(d) Crass differences in the way in which children are selected for inclusion in the return of malnutrition.(112)

It was concluded that the reports submitted by Medical Officers to the Board of Education did not necessarily indicate the nutritional state of the children of different areas, and did not allow comparisons. Simpson tried using height measurements as a basis of such comparisons, but concluded that these were misleading rather than useful. He therefore recommended that malnutrition should be assessed on clinical grounds without the use of height and weight, and that carious teeth and other such conditions should not be used as evidence of malnutrition. He proposed that the categories of nutrition should be entitled "Exceptional", "Normal", "Slightly Subnormal" and "Definitely Subnormal", instead of those previously in use.(113) Simpson admitted that his proposals still left uncontrolled the "personal factor in assessing malnutrition" but he thought that "the prospects of finding a reliable yard-stick are remote."(114) The clinical assessment of nutrition remained as vague a matter as it had been when Newman had first formulated the scheme for the medical inspection of schoolchildren.(115)

Educating the Poor

The third topic discussed at the July 1933 meeting,

was a project planned by Dr. Elwin T. Nash, (116) Medical Officer of Health for Heston and Isleworth. Nash had been awarded a grant by the Carnegie Institute, (117) for a project designed to teach the poor in his area how to buy and cook food, on the condition that it be supervised by two members of the ACN. Nash's plan was for an attempt to apply the approach to the dietary problems of the poor which had long been advocated by Cathcart. Cathcart, in a letter, expressed his complete approval of the experiment, but Buchan was

...unable to agree that in general poor people did not make very good use of their money and doubted whether the proposed demonstrations would be of real value. (118)

Mellanby was ambivalent and "thought the experiment could do no harm", (119) but Lindsay and Mottram vigorously defended Nash against Buchan's accusations, and were appointed Nash's supervisors. In September 1933, a meeting was held to discuss the project attended by Mottram, Lindsay and Nash and representatives of the Board of Education, Ministry of Health and Carnegie Trust. It was decided that the project would involve firstly the development of cheap nutritious recipes and the writing of a cookery book for the poor, which would be followed by a series of cookery demonstrations in homes and halls. (120)

The work met, however, with some unexpected problems, as indicated by the minutes of a sub-committee meeting which was held some nine months later, in June 1934:

Dr. Nash mentioned that he had encountered opposition, or threatened opposition, from those who suggested that the result of his work would

be to lower the standard of living of the working classes, and tend to depress wages. Political considerations were undoubtedly behind this opposition.(121)

Nash was advised that it would be wise to address the work to the public at large rather than just to the working class. However, in October 1934, at a further meeting, he reported that while he had booked a hall with a view to conducting the demonstrations, he

...regretted to say that political opposition, based on the false allegation that his work would depress the standard of living of the working classes, was likely to be considerable. It was a question of whether it was wise at the present stage of his work to risk serious opposition and he inclined to the view that in the circumstances it might be diplomatic to cancel the proposed public demonstrations.(122)

Nash suggested to the sub-committee that the demonstrations be held only in people's homes, but this idea was rejected. He was asked to go ahead with public demonstrations making it clear that they were not for one particular class but were arranged "purely on a dietetic basis".(123) Nash eventually produced a cookbook which was published by the Carnegie Institute, but his work on the education of the poor clearly did not live up to the expectations of Cathcart and others. Education in health matters continued to be an important component of Cathcart's thought, but we will see that later in the 1930s he began, in addition, to advocate some degree of compulsion in the encouragement of healthy personal habits.(124)

3.6. THE RESPONSE OF THE MINISTRY OF HEALTH AND THE ADVISORY COMMITTEE TO THE "HUNGRY ENGLAND REPORT".

The Weekend Review's(125) "Hungry England Report" was

written by a committee set up after a debate in the journal which ran from February to March 1933 on whether or not the unemployed had sufficient means to buy a healthy diet.(126) The remit of the committee, which included Mottram among its members, was to prepare a report on the minimum cost of an adequate diet. The introduction to the Report, published in May 1933, just three weeks after the committee was set up, warned that

...those who look to this report for rhetorical vindications or denunciations of the National Government, or of the local authorities and other organisations, will be disappointed...(127)

but it was pointed out that those looking through the previous correspondence would find that, in view of the conclusions of the Report, several of the destitute families mentioned were receiving insufficient financial support for an adequate diet. In view of this it was proposed that there was .

...no justification for leaving the subject as it is. The next step is evidently to have the implications and validity of the Report discussed by those concerned.(128)

The Report was under discussion in the Ministry of Health soon after it was published. Carnwath advised Newman that the ACN had also considered estimating the minimum cost of an adequate diet, but had decided that

...in view of the wide and possibly embarrassing repercussions... it [was] better to restrict themselves to general principles as they did in the Criticism and Improvement of Diets.(129)

However, he thought that the report

...for which Professor Mottram is mainly responsible and which seems to me admirable, is an attempt to express in practical form... the

principles of the Ministry's memorandum.(130)

Newman and Robinson were later advised by the Minister that it would be an advantageous to ask the ACN as a whole to consider the conclusions of the Hungry England Report.(131)

The story of the ACN's response to the request from the Ministry for an opinion on the Report, is closely intertwined with the story of the BMA/ACN controversy which is the subject of the next section. It provides further evidence of the ACN's division into opposing camps centred around Cathcart and Mellanby.

Greenwood prepared a memorandum on the Report for discussion at the July 1933 meeting.(132) The memorandum mentioned that in February 1933 the Ministry had received a report from the Medical Officer of Health of Deptford(133) who claimed to have shown that there was widespread malnutrition in his area, and that the Public Assistance Allowance was insufficient to provide the diets laid down in "The Criticism and Improvement of Diets". However an enquiry on behalf of the Ministry had shown that in the majority of cases available income,

...approximates closely to and in fact in some cases exceeds the average wages of the unskilled labourer, and with wise and careful expenditure there would appear little reason for undernourishment arising in any of the cases.(134)

This view had been re-iterated in rather stronger terms by the Public Assistance Committee of the London County Council (LCC).(135)

Greenwood wanted the ACN to discuss whether or not

they should agree to express an opinion on this matter, as the Ministry had requested, and whether they should assess the validity of the Hungry England Committee's use of the ACN standards. Cathcart was absent from the July 1933 meeting, but wrote a letter to the committee in which he expressed his agreement with the LCC Committee, and continued:

The difficulty lies in developing a sense of responsibility. The problem we are up against is not a simple nutritional one but a tough psycho-sociological conundrum which no mild enactments and pronouncements from Whitehall or elsewhere will solve - a dictator is required.(136)

Cathcart questioned the use of the Advisory Committee's Standard of 3,000 Calories, and pointed out that the League of Nations Committee which he had chaired in 1932,(137) had accepted 3,000 Calories for the average man at work, but indicated that 2,800 Calories was probably a more accurate figure. The Hungry England Committee was concerned not with working men, but with the unemployed. At the meeting, Mottram, Mellanby and Buchan said that they thought that the report was generally sound, but Greenwood was "...rather concerned about the question of the efficiency of the housewife", (138) and suggested that if

...it were possible to take an extensive set of statistics to ascertain what proportion of people, given a fixed sum of money, do in fact obtain a diet which is considered satisfactory, the result might prove very valuable... it might be possible to say whether it would be desirable to allow a margin over what should be an adequate allowance to cover insufficient household management.(139)

But this point was not taken up by the other members of the

Committee, and seemed completely lost on Mellanby who thought that

...if teaching were complicated by matters of that kind it would detract considerably from the force of the teaching.(140)

After some discussion Greenwood was asked to prepare a minute on the Committee's views on the Hungry England Report. The minute stated that the ACN agreed, with some reservations, that the Hungry England Committee

...based their calculations on physiologically adequate diets, and sees no reason to dissent from the financial considerations drawn.(141)

The ACN were also

...strongly of the opinion that, although it is administratively impossible to prescribe authoritatively how money should be expended on food, it is desirable that advice should be offered.(142)

With this in mind Mottram and Mellanby were asked to prepare a schedule of recommended diets, which were circulated to the ACN members. Mottram and Mellanby's recommendations included figures for calorie requirements, and they were therefore working within Cathcart's special area of interest. The calorie requirements which they used for infants did not meet with the approval of Cathcart, who after discussing them with Professor G.B.Fleming, the Professor of Paediatrics at Glasgow(143) set out his objections in a letter.(144)

Greenwood found this development alarming, and in November 1933, shortly before the publication of the BMA Report, he told Hudson

I take rather a serious view of the position created by Professor Cathcart's letter... it

seems to me, if there really is an irreconcilable divergence between three members of the committee, all of whom are University Professors of relevant branches of knowledge, that the committee has no ethical right to offer authoritative advice... I have for some time felt considerable embarrassment in the handling of these subjects. On the one hand, the preparation of colourless statements which really only gloss over differences of fundamental opinion cannot be of any administrative value to the department. On the other hand, the democratic method of settling matters of dispute by voting does not seem to me to be applicable to scientific problems. I am rather tending to the conclusion that there is not at present sufficient agreement among those whose experience gives them the right of judgement for it to be possible to advise the Ministry upon many of the problems submitted.(145)

Magee was asked to consider this problem,(146) and he later advised his colleagues, in terms that echoed Cathcart's, that nutrition is "...not only a scientific question, but one which is also governed by the traditions, customs, and social life of the community and by the psychology of the individual, by his environment and idiosyncracies..."(147) This being the case, Magee thought that it was questionable whether the publication of a scale of diets would be worthwhile. He also suggested that it could even "...do actual harm, because however much one may protest to the contrary, the standard is liable to be interpreted literally or, worse still, the importance of the individual item may be inflated by unscrupulous or ignorant persons, and used for propaganda."(148) When the diets were discussed by the ACN in December 1933 (in the absence of Cathcart and Mottram), it appears that the "democratic method" did prevail, and some concessions were made to accommodate Cathcart's views. Magee was asked to revise the

diets accordingly.(149)

When this revision was completed, Carnwath suggested that the diets should be put to the joint BMA-Advisory Committee Conference, which had been arranged to try and sort out the controversy which had arisen following the publication of the report of the BMA's Nutrition Committee, and which will be dealt with in detail later. However, Carnwath's suggestion was opposed by the Minister on the grounds that the Joint Conference should stick to the matter which had caused the dispute.(150) When the diets were eventually put to the ACN after the dispute with the BMA had died down, Cathcart advised Magee,

Although the diets are quite good I would not circulate them. You will be asking for trouble if you do. The majority of people are too literal in their interpretations. We have already in the Ministry of Health/BMA report emphasised the futility of any hopes of using any one diet. Sit on them.(151)

Cathcart's advice was followed, and the schedules of recommended diets, prepared originally in response to the "Hungry England Report", were never published.

3.7. PUBLIC CONTROVERSY.

Two weeks after the debate in the Weekend Review began, and prior to the formation of the "Hungry England Committee", a letter in the journal from an anonymous BMA member, pointed out that the BMA regularly appointed advisory committees, and asked:

Could it not now be persuaded to appoint a committee... to tell us exactly how much a family needs to keep it in good health and the cost of food at present-day prices in the kind of shops that the poor would have to buy it in?(152)

Later a "Physician"(153) and a "London Surgeon"(154) supported these views and the Review approached the BMA and suggested that they take up the idea.(155) It was proposed to the BMA's Science Committee that:

In view of the economic problem... and the interest recently exhibited in problems of nutrition... it would appear that the time is ripe for the medical profession to make an authoritative statement on what a proper diet should be.(156)

The BMA's Council subsequently appointed a Committee to

...determine the minimum weekly expenditure on foodstuffs which must be incurred by families of varying size if health and working capacity are to be maintained, and to construct specimen diets.(157)

The membership of the committee included Mottram and Buchan but Greenwood declined the invitation to serve.(158) Dr.M'Gonigle, Medical Officer of Health for Stockton-on-Tees(159) was appointed Honorary Secretary. Other members included S.J.Cowell,(160) and G.P.Crowden of the London School of Hygiene and Tropical Medicine.(161)

At a meeting in mid-May it was decided to use 3,000 Calories as the energy requirement, and 37 grams as the animal protein requirement of the average adult male(162) which were the values used in the ACN publications.(163) When the drafting subcommittee(164) reported however, the standards of 3,400 calories and 50 grams of animal protein were used.

On the day of publication, in late November 1933, the BMA Report was used by the press to criticise the Ministry of Health(165) and a few days later Mr. Tinker,(166) a Labour M.P., submitted a parliamentary question which asked

whether in view of the BMA Report the Government would "consider the necessity of making provision for more adequate allowances for unemployed persons and their dependents?".(167) The Parliamentary Secretary of the Ministry of Labour(168) told the House of Commons that the report was under consideration by the Advisory Committee on Nutrition.(169) By the beginning of December the Labour Party had prepared speakers' notes on the BMA report. Figures were supplied to show that

The amount left after purchasing the minimum foodstuffs laid down by the BMA would not pay the rent alone in many thousands of unemployed households. The only possible conclusion to be drawn is that in order to pay the rent and purchase the bare necessities, the housewife must economise on food. This report provides overwhelming justification of the Labour party's action in refusing to agree to the cut in the pay of the unemployed.(170)

Greenwood was soon consulted by the Ministry for advice about what could be done to alleviate the embarrassing situation which was developing. He was pessimistic:

The fact that two members of the Ministry's committee have lent themselves to what may be a dangerous agitation, strengthens my view that the Ministry's committee is not working efficiently.(171)

Greenwood had little hope that a unanimous condemnation of the BMA report could be obtained, and thought that at best there would be "a resignation by a minority, who will be proclaimed martyrs" However the Minister had only just re-appointed the committee for a second three year period. Newman commented to Robinson:

I think we could manage without any ill-will to

:

liberate Professor Sir Gowland Hopkins, President of the Royal Society, and Dr. Mellanby the new secretary of the Medical Research Council [but] any substantial reconstruction at this time would certainly be attributed by the public to some disagreement having arisen with regard to the BMA Report... but if we could get rid of Hopkins and Mellanby, we should ease as well as strengthen Greenwood's position...(172)

Magee, busy helping Simpson with a survey in Leeds, (173) wrote offering suggestions on how to help the government weather the storm. He reported that Simpson had found about 12 per cent malnutrition among children but that on inquiry

...amongst the officials here it would appear that many of these children belong to families above the scale of relief... Even on the BMA scale their income should suffice... Ergo malnutrition is perhaps as much a question of ignorance as of £:s:d. (174)

Magee pointed out that Simpson had obtained similar results in London and suggested that the data could be used in answering questions in parliament.

But the main concern of the nutrition experts and the officials of the Ministry was the fact that the BMA had used standards differing from those in the Ministry's publications. Buchan wrote to Newman to apologize for the embarrassment which the BMA Report had caused and enclosed some letters which showed how he had argued against departing from the accepted standards. (175) Newman discussed the Report with Sir Henry Brackenbury (176) and Sir Robert Bolam, (177) senior members of the BMA, and afterwards informed Robinson that

...there is a good deal of anxiety in the BMA itself as to the issue of the Report, which represents neither them, nor the medical

profession. It is, in fact an essay written by Dr. M'Gonigle of Stockton, who... [is] embarking upon a publicity campaign in regard to nutrition. I have obtained the admission that he wrote the report which should have been issued by him and him alone...(178)

The Minister of Health, Sir Hilton Young, at a meeting with his chief officials,(179) opposed resignations from the ACN and said that the question was

...how to make the best of a bad job. It was obviously impossible to overtake the harm done by the BMA report but something might be done to mitigate its... effects... the important thing now was to impress on the Advisory Committee that they must justify their 3,000 Calorie standard which has been contraverted... Would the Advisory Committee be willing to make a simple statement that the BMA report was wrong?(180)

When the ACN met, a "unanimous" condemnation of the BMA report was obtained. Greenwood had produced a memorandum which suggested that the remit of the BMA Committee, was beyond their own:

We have never regarded ourselves as chosen to solve economic problems and in the memorandum on the Criticism and Improvement of Diets which we prepared last year no financial matters were discussed.(181)

Greenwood thought that, had the BMA used the standards recommended in the ACN's memoranda, the ACN would have been justified in declining to comment. He argued for the 3,000 Calorie standard,(182) and stated that the BMA were obliged to justify their change "not by innuendo but by the provision of better evidence." (183)

Mottram and Cathcart were both absent from the meeting, but they both produced a memorandum. Mottram's memorandum suggested that

There is so little discrepancy between the...

estimates that I think no-one need worry about it. We [the ACN] wrote that the 3,000 calorie standard was not very generous and made no allowance for wastage.(184)

On raising the animal protein requirement, Mottram believed that there was no scientific basis for either figure, but explained that in accepting the higher figure in the BMA report he overcame his scruples because of

...representations from those who had collected budgets from the unemployed and found that as families passed from the unemployed category to the employed, the first class protein rose from 25 or 30 grams to 50+(185)

Cathcart, in his memorandum stated that

...the general opinion of workers in the field of nutrition has been... now to accept... a smaller protein intake than was formerly considered desirable. Viewed as a scientific finding this statement of the BMA as regards the level of protein intake and the proportion of this intake which should be taken in the form of first class protein is simply valueless.(186)

Similarly, Cathcart argued that the BMA's 3,400 Calorie intake could not be justified because

...Rubner,(187) Lusk(188) and others, specialists in this field, have accepted without question the estimate of a requirement of about 2,700 Calories gross for men engaged in occupations like clerks, tailors, doctors etc. a group who are... quite as active as the average unemployed.(189)

Hopkins, Mellanby, Buchan and Lindsay stated their agreement with Greenwood's memorandum, and a resolution was unanimously agreed and was sent to Young.(190) This was subsequently included in a circular issued to County Councils and Sanitary Authorities on the 4th of January 1934. The Circular stated that:

...no evidence known to the Advisory Committee, and no argument stated in the BMA Committee's Report, justify the increase of 3,000 Calories to

3,400 Calories or of 37 grams of First Class Protein to 50 grams.(191)

This did nothing to alleviate the controversy, but rather fuelled it. The Director of the Conservative and Unionist Central Office wrote to Young to inform him that the Area Agent for the West Midlands had found that the Circular was

...causing a great deal of difficulty in the industrial areas... Conservative workers are being met with the statement that the National government considers 5/2d a week is sufficient for a working man to live on.(192)

Protests against the Circular were received from eight local councils, and one Trades Council. Several councils stated that they agreed with the BMA Report, and one said that they agreed with neither the BMA nor the Advisory Committee.(193) In early January 1934, Mr. Shakespeare, Parliamentary Secretary to the Ministry of Health, expected to be heckled about the issue at "a number of politically important meetings... in his constituency"(194) and asked Robinson for advice on how to tackle the hecklers.(195)

A letter appeared in The Times on the 6th of January, from Dr. Anderson, the secretary of the BMA, who commented on the Circular and, explained that the 3,400 Calorie standard allowed for wastage while the 50 grams of first class protein was half-way between the Advisory Committee's 37 grams and the War Office's 62.7 grams for the peace-time army. He also pointed out that the terms of reference of the BMA Committee,

...specify a minimum standard, not for mere existence level, but for the maintenance of health and working capacity.(196)

Greenwood responded to this with a letter which was

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published in The Times two days later. He was sarcastic towards Anderson, and bitter towards Mottram, and complained that

The "expert" committee... [meaning the BMA Committee] conceived itself competent not only to overrule the judgement of physiologists whose life work has been in the field of nutrition and metabolism, but also to reach conclusions of economic and financial order. The Minister's Scientific Advisers may have been mistaken in supposing that they were familiar with the physiological data... but at least they never so grossly over-valued themselves as to believe they were competent to fix any pecuniary standards whatever.(197)

In a further exchange of letters in The Times Anderson defended the BMA's standards by quoting passages from the "Criticism and Improvement of Diets" where the Advisory Committee's standards were said to take no account of wastage,(198) and 37 grams of first class protein was described as "not high".(199) He also quoted from the BMA Report in defence against the charge that it had fixed "pecuniary minima", pointing out that a range of costs had been given and that it was stated that "no single figure for the minimum cost can be regarded as generally applicable."(200) Greenwood retorted:

According to the Medical Secretary... his Committee does not fix pecuniary minima; it only determined the minimum allowable sum of money for which such a diet could be purchased.

I will venture to suggest to the Medical Secretary that, since it is, humanly speaking, impossible to bring a corporate body to the point of expressing regret, a silence on his part will be golden... [the BMA] has presumed to proclaim something to be known which is not known. It has permitted dogmatic statements to be broadcast throughout the land although the members of the committee knew, or should have known, that persons more ignorant than themselves would infer that my colleagues were incompetent or

dishonest... It does distress me greatly to see difficult scientific problems made the sport of newspaper paragraphs and political clubs.(201)

But Greenwood's letter only added to the newspapers' "sport". The Daily Herald, under the headline "Diet Expert's Queer Contradiction", compared Greenwood's statement that the Advisory Committee did not attempt to fix pecuniary standards, with the fact that costs were given in "Diets in Poor Law Children's Homes".(202)

3.8. THE ADVISORY COMMITTEE/BMA JOINT CONFERENCES.

On the day that the Daily Herald ridiculed Greenwood, Lord Dawson,(203) President of the Royal College of Physicians, suggested in The Times that the two committees should meet in a "joint session". He offered "...the hospitality of the Royal College... for this purpose and any other assistance we can give..."(204) This suggestion was backed by an editorial under the heading "A Wise Proposal".(205) Robinson advised Young that Dr. MacNalty,(206) the Deputy Chief Medical Officer with whom he had discussed Dawson's letter,(207) thought a joint meeting

...would be advantageous not necessarily in regard to the issues... but in the interests of harmony and good feeling in the medical profession.(208)

Robinson added "Politically also I suppose there is a good deal to be said for it", (209) but warned that the Advisory Committee, consisting of "most eminent medical scientists" might not be prepared to meet the BMA Committee, "a mixed lot of people of very varying status..."(210) On the 11th

of January, Young and Robinson met with Greenwood, and Greenwood suggested that those Advisory Committee members with "special knowledge of physiology" (Hopkins, Cathcart and Mellanby) might be asked to meet three members of the BMA Committee to "discuss the purely physiological question of calorie and protein standards." (211) Subsequently Young sent a flattering letter to Hopkins, Mellanby and Cathcart, which suggested that Dawson's proposals represented a view held by the public which,

...knowing nothing of the wide differences in status in this matter between the Advisory Committee and the BMA Committee... tends to regard the issue as a difference of opinion between experts which could usefully be explored further... (212)

Young stressed that he was content to be guided by the ACN, but continued:

...the present position... is not satisfactory on the wider grounds of public health and of good feeling in the medical profession, and... it might be appropriate and useful if a joint discussion could be arranged. (213)

The discussion would be limited to physiological questions, to Mellanby, Cathcart, and Hopkins, and "...those members of the BMA Committee whose views as physiologists can be regarded as entitled to consideration..." (214) Robinson included, with Hopkins's and Mellanby's formal invitations, a personal note encouraging them to accept, but, he told Greenwood, he did not know Cathcart. (215) Greenwood wrote to encourage Cathcart, (216) and, after talking with Robinson, so did Carnwath. Carnwath informed Cathcart that Robinson felt "...that it is on you mainly that we must rely to make the BMA people see reason". (217)

Hopkins and Mellanby struck a conciliatory note in their letters agreeing to attend the joint meeting. Mellanby reported,

I have seen both Mottram and Cowell during the week and I do not think there will be any difficulty in finding a formula which will satisfy the members of the proposed meeting.(218)

But Cathcart, in his reply to Young, stated:

As I am fully convinced the BMA cannot justify their conclusions... it seems to me the real difficulty will be to find a formula which will allow the BMA to retract and at the same time to "save face".(219)

Greenwood, however, warned Robinson that even if the BMA did surrender, "...we are only at the beginning of our troubles."(220) He explained that the most convincing evidence for the ACN's Calorie requirement was Cathcart's dietary surveys of St.Andrews which, he said, also contained "financial data which can be used with damaging effect."(221) He illustrated his point with an imaginary speech which used these figures for an attack on the Government, and which asserted that all the talk about Calories was a "smoke screen".

The BMA readily agreed to the joint meeting and appointed Mottram, Crowden and Cowell, as their representatives. A press notice announced that the meeting had been arranged.(222) Carnwath was very active in writing to participants to try and facilitate an agreement. Cathcart told Carnwath, in response to the letter encouraging him to accept Young's invitation, that his sympathies were

...all with the Ministry and it is because I feel

the Ministry has been most unjustly treated that I consented to attend. What I want to know is how the BMA can get out of this mess and save its face... Will the BMA have the courage to come forward and say they were misled, that they trusted to a supposed expert who misled them? Somebody has got to be thrown to the lions.(223)

He continued this theme four days later:

The danger... is that an attempt will be made to compromise - the solution... loved by the average decent Englishman. As I am the solitary Scot and believing as I do that the evidence against the 3,400 is as complete as that against 3,200, if any attempt is made to reach an agreement on this basis... there will be a minority report. The position becomes ever more ridiculous... Why should we argue with idiots who are placing mere assumptions and "thinks" against what has been accepted as sound scientific fact.. the present set of intuitions if they can be dignified with such a title are based... on nothing but loose thinking and sloshy sentiment.(224)

Carnwath replied,

...I appreciate your difficulty of trying to mix oil and water. But even an emulsion might be useful if it can take the form of a restatement of fundamental facts on which everyone is agreed together with an indication of what is speculation, intuition or an expression of a desire to play for safety. The Minister is most anxious that some formula can be devised...(225)

Carnwath spared no effort in trying to smooth the way for a satisfactory outcome to the conference. He met Greenwood, discussed the problem with Hopkins, and had lunch with Cowell. He reported to Newman and Robinson that he did not "anticipate much difficulty" with Cowell but continued:

The trouble is tempers are frayed and the meeting... may be spent mostly in smoothing ruffled feelings... Cowell has special reasons to be aggrieved. No-one was more amazed and disgusted with the way the BMA Report has been prostituted for political ends. On top of this came the smack from the official Committee in the Ministry's circular and the splash of vitriol

from its Chairman, which has not helped sweeten his temper. But he is a decent fellow at heart and anxious to be accommodating...(226)

On the other hand Carnwath thought that Crowden was

...a stubborn rather stupid little man who has done some independent work on the costs of diets - an administrative field that should, I think, be barred to one occupying his position in the School of Hygiene - a semi-Government Establishment.(227)

There were no signs of Cathcart softening his line. He asked Carnwath:

...how is the withdrawal of this silly 3,400 Calories for the unemployed to be achieved? It must not be allowed to stand. Indeed it cannot be left or you [the Ministry] will always be coming up against it in the future. The BMA must be put in their proper place... Mottram and Cowell better prepare to do the noble hero stunt and go to their scientific (such as it is) deaths...(228)

Greenwood prepared a memorandum which he hoped could form the basis for an agreement and he asked Cathcart for his opinion. Cathcart complained:

You treat the BMA finding with deference as if it were co-equal in all respects with the Ministry!... Instead of being reasoned with, Mottram and Cowell should be carpeted for infamous conduct.(229)

Greenwood replied that he agreed with Cathcart's "ethical point", and said that he thought that the medical members of the BMA Committee, should have been brought before the General Medical Council. He sent Cathcart a copy of correspondence which he had had with Dawson on this matter.(230) Greenwood also explained that he had attempted to say in his memorandum that the ACN had adopted

...the only possible basis... of calculation... the statistical average and... on that account would have been unwilling to fix prices in any

absolute sense. The BMA Committee, dimly conscious that a statistical average must be unsafe as a basis for rigid rationing gaily made additions... with a quite erroneous idea that if they did so rigid rationing would be a practical proposition. In other words I was trying to say that the two committees proceeded on different premises... that the premises of the BMA are wrong and that the committee was trying to do something that is impossible. Now surely that does not compromise our scientific position...(231)

Greenwood advised Cathcart on the possible "unpleasant results" of demanding "unconditional surrender". There could be two minority reports, or

...if the conference reports by a majority in favour of absolute surrender... then the BMA Committee will probably disown their physiologists and raise the cry of the wisdom of the Body, the view of grave clinicians and so on as distinct from mere laboratory scientists... that bray will be pretty deafening and will seriously embarrass the Ministry.(232)

The conference was held on the 6th February and Hopkins was elected Chairman. He introduced the discussion by stating the need for "...some sort of demonstration that the differences between the committees are not such as have been assumed..."(233) and urged the others to avoid mutual criticism, "except insofar as that may be necessary... to clear up the facts." According to Hopkins the task was to decide "...what sort of statement... we can draw up, what line it should take, what character it should have, and to endeavour to reassure the public..."(234) He stressed that the Advisory Committee's standards of 3,000 Calories, and 37 grams of first class protein, had not been given as dogmatic figures, but with certain qualifications, and he understood that the BMA Committee had used 3,400 to allow

for wastage. However Crowden, speaking first for the BMA, failed to take up this point, and instead explained that

...the BMA Committee was considering a man... doing muscular work. A man of good physique keeping fit, definitely keeping up his body weight... whether he is in work or out of work, either by occupational training, allotment work, or in the work itself...(235)

Cathcart, speaking next, stated that

...Rubner, Lusk, Voit, Benedict, Atwater and all the people of international reputation in this field have said for a doctor 2,700 calories is ample,(236)

and said that he was especially aggrieved that the BMA committee had described 3,000 Calories as a "...bare subsistence level..."(237) Crowden accepted Cathcart's point but then insisted that "there is a 10% loss by absorption."(238) This Cathcart doubted, but Crowden continued:

There is very little data about the digestibility of food. I think our feeling was that, having regard to the scarcity of data, we must err on the generous side...(239)

Hopkins repeated an earlier question about what evidence there was for the 3,400 Calorie standard, and Cowell then took up the issue of wastage:

...there was no new evidence... We considered that we were getting data from... Professor Cathcart's investigations and so on, and making allowances for wastage...(240)

At this point Cathcart introduced new figures recently published by the American Department of Agriculture, and which described 2,930 Calories as a "liberal diet". After this had resulted in the discussion going around in several more circles, he said:

I think that you can place very little stress on calories as a whole. I took figures for thirty-six... unemployed families and the figures ranged all over the place...(241)

He developed this theme later:

If you had said in your Report... that it was up to the Public Health Authorities to see that necessitous children got a square meal... it would have covered the whole thing, rather than put down a flat rate, because to put down a flat rate for anything is futile.(242)

Crowden replied "We are all agreed to that", and Cathcart continued:

To put down 3,000 Calories is equally futile. I do not think I would say that one figure is better than another. Anyone who puts down a flat rate is asking for trouble...(243)

Crowden then said:

...a standard is a dangerous thing because it is bound to be excessive for some and too little for others... Would you define men in categories, active and moderately active?(244)

Cathcart thought that this would be the approach to adopt, and in this way a basis for an agreement began to emerge. Crowden then revealed a draft paper which he had prepared, which opened:

It must be clearly recognized that owing to individual differences in physique, personal habits, likes and dislikes, and the variation in muscular effort... it is not only impossible to define but also there does not in fact exist a standard food requirement which could be rigidly applied to individual men... a workable solution of the problem of physiologically desirable dietary standards... would be provided by a sliding scale... based on individual physique, occupation and habits...(245)

Cathcart said that subject to some minor amendments, he would agree and Hopkins said that it was becoming clear that "there will be no difficulty in our agreeing on a

little give and take". He suggested that a sliding scale could be formulated which would "more or less cover up our differences."(246)

At this point Mellanby moved the discussion on to first class protein requirements. He understood that

...the BMA Committee increased the amount... because they had the feeling that we were not consuming sufficient milk... and I think it was largely that which brought about the rise from 37 to 50. My feeling is that is absolutely right...(247)

Cathcart then initiated an exchange which must have emphasised to the participants just how nebulous were the facts which they were discussing:

Cathcart: Where does 37 come from?

Crowden: ...I think the figure comes from five per cent of total calories in first class protein...

Cathcart: Who said so?

Crowden: It is an American statement. I cannot trace where it came from.

Chairman: I have seen it.

Mellanby: Is it Sherman?(248)

Chairman: No it is not Sherman.

Cathcart: As a matter of fact there has been no experiment on the relation of first class protein to any other protein...(249)

Later Cathcart explained why he had agreed to the 37 gram standard in the ACN Report:

I did not object at the time... because I have always worked it out in my own diets that if you get one third protein as first class protein you are quite safe, but if you want to improve the diet, raise it from one third...(250)

Mottram was late, and when he arrived, Hopkins asked him where the 37 grams had come from, which initiated the following exchange:

Mottram: ...it came... from saying five percent of total Calories...

Cathcart: Where did it come from originally?

Mottram: From some American calculations which I have completely forgotten.

Cathcart: No real experiments have been done on it?

Mottram: No.(251)

The meeting adjourned with a feeling that an agreement was in sight, and it was decided to meet again in February. The Officials were pleased. Robinson advised Young

...I think we can safely let this run on now to the stage of an agreed report on the basis outlined in Dr. Crowden's paper.(252)

The Officials, confident that a satisfactory solution was in sight, were relatively inactive during the period between the two conferences but Cathcart indicated to Magee that he was not so content with the situation:

I still don't think the BMA have any evidence to go on. They have given in about the 3000 not being bare subsistence.(253)

Cathcart prepared a memorandum, which was circulated to the members of the Joint Conference, in which he again quoted the new lower American Calorie requirement figures and stated:

Dietetics is not and cannot be an exact science dealing as it does with unknown metabolic phenomena in the living organism. If as is generally admitted our ignorance about the qualitative aspect is profound, that concerning the true inwardness of the caloric aspect of the problem is perhaps even deeper. The faith placed by many in calories almost amounts to fetish worship.(254)

In this quotation we see Cathcart re-asserting the unknown nature of the living process,(255) and echoing earlier arguments against over-reliance on calories as a measure of dietary adequacy,(256) which, in his bid to present an alternative to the emphasis on vitamins, had long since

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faded from his writing.(257)

The second conference took place at the end of February. The proceedings were introduced by Hopkins who presented a few paragraphs that he had drafted on the train. The BMA representatives were better prepared, and presented two possible statements as a basis for the discussion. While the general idea of a sliding scale of calorie requirements was still agreed, there was a long discussion concerning the details. Cathcart tried to make a stand for lower figures, but the conference failed to reach a conclusions. The matter was therefore left to be decided between Crowden and Cathcart. There was also another long discussion about the first class protein requirement during which Cathcart made a stand against the 50g standard. But nobody had been able to find any convincing evidence for either the 37g or the 50g. The main point of agreement which eventually emerged was that laying down either figure was equally "ridiculous". Again no final conclusion was reached and a discussion on vegetarian diets showed that the conference was not even agreed that the adult diet needed to contain any first class protein. Finally, it was decided that the secretaries of the committees, Anderson and Magee, would collaborate with Cathcart and Crowden in drafting a report.(258)

Unfortunately there are no detailed records of the final stages of preparation of the Report. It seems, however, that Crowden prepared a draft of what he called the "nutrition agreement", (259) which included suggestions

which Magee had made, with which Cathcart was in general agreement. At the end of March Mellanby, and in mid-April the BMA caused some difficulties,(260) but these were soon resolved, Magee acting as arbitrator. After some further difficulties,(261) in early May Magee sent the final report to Anderson,(262) and to Carnwath(263) who passed it on to Newman:

I hasten to pass this to you... especially in view of the fact that Dr. Magee has already "liberated" a copy to Dr. Anderson.(264)

Newman passed the Report to Robinson, whom he advised "You will observe the BMA have got it and anything may happen", (265) and a few days later he urged Robinson to press ahead with publication to avoid being "anticipated".(266) Robinson advised the Minister that publication, and the preparation of a circular for the local authorities, was the only possible course because "we cannot suppress the report altogether." (267) However he warned:

Judging from what happened before I... suppose that the ordinary press line... will be that the BMA have won since the table on page 5 shows an ascent to 4,000 Calories for one class and the protein on page 6 also appears to be higher. Very few of the papers will I fear pay much heed to the words of caution scattered through the document... I do not think however that it would be wise to try and guide comment by any sort of covering note.(268)

The report was published by the Ministry in mid-May and was sent to local authorities;(269) it was also published in the BMJ.(270) According to the Report the aim of the conferences was to

...consider whether any important differences

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existed between the... Ministry's Committee... [and] the British Medical Association... and if so, to determine the significance of such differences.(271)

It was stated that it was now clear that "the divergencies were more a matter of misunderstanding than of actual fact", (272) which were explained in terms of the differing objectives of the two committees. The Advisory Committee's figures were recommended as

...adequate to supply the needs of the average "man" of the entire population... These... were intended as a rough guide to medical officers... to assist them in placing the nutrition of communities and institutions under their charge on a proper basis.(273)

On the other hand, it was explained, since the remit of the BMA Committee was:

...to determine the minimum weekly expenditure on foodstuffs... by families... if health and working capacity are to be maintained... [they] ...thought naturally of unemployed men and their families and bore in mind that many unemployed spend a good deal of their time working on allotments, going to and from labour exchanges in search of work, or else keeping themselves in good physical condition by daily exercise in training centres.(274)

Because of all this vigorous exercise associated with unemployment, the BMA Committee had

...felt justified in recommending 3,400 Calories and 50 grammes of first class protein... as essential to maintain health and working capacity in a family of this type.(275)

It was explained that

...nutrition and dietetics... cannot be considered exact sciences... it is not only impossible to define, but there does not in fact exist, any standard food requirement which can be rigidly applied to all men...(276)

and a "Sliding Scale of Calorie Requirements" was

presented. In discussing the first class protein standard, the report admitted that there was little evidence upon which it could be based, but after discussing the need for an increased first class protein intake for expectant and nursing mothers and children, concluded that

In the case of the adult... a diet to be reasonably adequate should always contain a proportion of animal origin; ...on the basis of accepted dietaries, which have stood the test of practical experience, this proportion should not be lower than one-third of the total protein consumed, and may perhaps with advantage be increased to half.(277)

The report ended on a note on which, it was stated, all the signatories were agreed. They deplored

...the exaggerated importance which has been attached to the alleged disagreement... there did not exist, neither does there exist now any fundamental disagreement on matters of scientific fact.(278)

Compared to the stir caused by the BMA Report, the report of the joint conferences received very little attention in the press. But the public controversy of November 1933 - January 1934, had been a major headache for the Ministry and the days of the ACN, as originally constituted, were numbered. However, during and following the controversy there was some discussion of new activities, and we will consider these before giving an account of the final demise of the original committee and its reconstitution from mid 1934 to February 1935.

3.9. WHAT WILL THE ADVISORY COMMITTEE DO NEXT?

From December 1933 until the last meeting of the original Committee in June 1934, despite the problems which

the ACN was facing, two possible new initiatives were discussed at meetings, formal and informal, and in correspondence. These initiatives were proposals for activities based either on Mellanby's reductionistic, or Cathcart's conservative approach. An attempt by Greenwood to combine the proposals into one activity failed. At the December 1933 Committee meeting, when the BMA Report was unanimously condemned, Mellanby expressed a desire for a large field experiment, which would demonstrate the value of applying the dietary reforms which he had long instigated. This was a proposal for an experiment very similar to one which was turned down by the MRC in 1927.(279) In early January 1934 he sent a paper on "Nutrition and Child-bearing" to the Ministry, with the suggestion that it should be circulated, and discussed at a future meeting.(280) With Greenwood's approval, the paper was circulated.(281) The paper explained Mellanby's desire for a large experiment. He reviewed evidence for an effect of nutrition on maternal and infant health, and declared:

...it has long been a great puzzle to me why so little thought and work has been given to this... The attention of the medical man has been so fixed on the... mechanical process of childbirth and on the treatment of the illnesses of pregnancy... that he seems to have forgotten that underlying all these is the... problem of the relation of the nutrition of the mother to the normal functioning of her organs.(282)

Mellanby hoped a large experiment would give such spectacular results that its impact on the "medical man" would remedy this situation. His interest in convincing the medical profession of the value of the new knowledge of

nutrition, which we noted during the rickets controversy, and in his speech to the 1927 BMA meeting, was clearly unchanged. Mellanby's proposal was made at a time when the ACN faced the challenge of the "medical men" of the BMA Nutrition Committee. While, unlike Cathcart, Mellanby was not greatly bothered about this challenge,(283) his proposed new project attempted to re-cast medical men in what he regarded as their proper role - as consumers of his version of the new knowledge of nutrition.

The second proposal for new activities was for an investigation into the "intimate food habits of the people", (284) which was favoured by Cathcart and Greenwood, and in which they attempted to interest Robinson. Greenwood also discussed the idea with Mellanby because, as he told Robinson it seemed necessary "to discover how far Mellanby would be sympathetic", (285) for he thought Mellanby's attitude was "critical". (He had just become Secretary of the MRC.) Greenwood thought it would be useful to give Robinson the impression he had formed of Mellanby, and told Robinson in a confidential memorandum:

Mellanby is not even faintly interested in "calories" or "first class protein"; quite genuinely surprised that there should be all this fuss about them and perfectly ready to accept any statement about them... If the Ministry will only see to it that the pregnant women and the young children... get enough cod liver oil and milk, with a certain amount of iron and calcium, our problem is solved. Why not do it then? What on earth is the good of investigating the food habits of the people?... Why, he has explained this to Baldwin and Baldwin has told him that since milk is home produced and we have a fishing fleet, this is just the kind of food policy that the nation needs. (286)

Greenwood proposed that they should attempt to combine a test of the "Mellanby doctrine" with a study of food habits, and suggested that such a scheme

...properly licked into shape by you and your people, would be welcomed by the Advisory Committee. Cathcart would be skeptical about the all-sufficiency of the Mellanby doctrine, but would not refuse to give it a trial for he would strongly support the other part of the inquiry. Mellanby, confident that his point would be made, would not object to the other inquiry. Hopkins would bless them both.(287)

Greenwood sent a copy of his memorandum to Cathcart. His covering letter suggests that he viewed the support of Robinson rather than Newman as most crucial to the success of their plan.(288)

Papers relating to the fate of the idea of investigating food habits have not survived, but it was not mentioned at any ACN meetings. During the spring of 1934, however, Greenwood met with Mellanby and Magee, and asked the latter to draw up a plan for a large-scale investigation on the value of milk as a supplementary ration for pregnant and nursing mothers. Magee's plan was circulated to the committee in May, and comments by post were requested.(289) The plan was opposed by Cathcart on the grounds that there were no controls, that the scheme would be very costly, and that no-one denied that milk was an excellent food anyway.(290) The matter was discussed at the June 1934 meeting, in Cathcart's absence, but Newman attended in order to present his own views. Newman thought the Committee would agree that "there is no need for a further scientific investigation of the value of milk as a

food"(291) but suggested that

...a demonstration on a suitable scale of the valuable nutritive properties of milk might well be considered.(292)

However, Newman was not enthusiastic about such a project. He declared that "the people of this country are better fed than ever before", to which Mellanby retorted that this

...was no doubt true in a relative way, but that it could be much better, and it was because of this that the committee were discussing the present proposal.(293)

Mellanby explained that in his view what was most needed was

...a clear demonstration of what could be done by proper feeding on the basis of our present knowledge. Nutrition was as important as sanitation, and more important than housing from the point of view of bodily health. The people must be shown, clearly and convincingly that if the body grows and develops properly much disease will disappear... Cereals form 60%, and among the poor classes, 80% of the food consumed. There should be a considerable increase in the consumption of dairy products and green vegetables at the expense of the cereals.(294)

Mellanby wanted to feed his diet to 40-200 women during pregnancy, and to their children until six years of age. He replied to Cathcart's criticisms by saying that in an experiment such as his own or Magee's

No special controls would be necessary because unless the beneficial results... are perfectly obvious they would be of no great interest.(295)

Buchan agreed, and suggested that medical officers in charge of ante-natal clinics should be advised on the proper feeding of expectant and nursing mothers. It was decided that Buchan and Mellanby would prepare a memorandum on this matter, and this, with Magee and Mellanby's

proposed investigations would be discussed at the following meeting. But the June 1934 meeting was the last meeting of the original ACN, and neither the large scale demonstration, nor the advice to medical officers, seem to have been discussed any further.

3.10. RECONSTITUTION OF THE COMMITTEE, AND ITS ACTIVITIES 1935-1939.

When Greenwood tendered his resignation in July 1934 he wrote to the Minister to explain:

I am resigning... because... I am not a suitable chairman. When the Committee was appointed it could not have been foreseen that some of the subjects upon which its advice was required would be a matter of heated public controversy... when an official committee has to deal with acutely controversial issues, its chairman must be a man of such standing that the general public and his colleagues will have confidence in him... I am quite unknown to the general public and am junior in age and scientific standing to two members of the committee. Consequently some members... have... felt themselves at liberty to express in public opinions rather difficult to harmonise with the advice the Committee has given you.(296)

Robinson and Newman agreed the resignation should be accepted and Robinson advised Young that a press statement should be made in which Greenwood's recent appointment as President of the Royal Statistical Society would "serve as a cloak to cover the facts." (297) Since the BMA affair, nutrition had become a highly sensitive issue for the Ministry and the Government, and Greenwood's resignation was taken as an opportunity to reconstitute the ACN. But before considering the story of the ACN any further, we will pause to discuss some more general developments which illuminate the context of the events of the later 1930s.

In early 1934 a number of left-wing doctors(298) had formed a "Committee Against Malnutrition"(CAM) and explained in their first bi-monthly Bulletin in March that doctors, scientists and social workers could become their "associates" if they agreed that

1. ...there exists in this country widespread undernourishment among the families of the unemployed and low-paid...
2. ...this must... lead to a... deterioration in the physical standards and health... and of this deterioration there are already signs.
3. ...the last thing upon which a community must economise is the nutrition of its working class.(299)

The business of the Committee was to provide information for organisations and individuals who wished to combat malnutrition and it was proposed to do this by writing letters, articles, books and pamphlets, and speaking to organisations such as "teachers' groups, religious bodies, cooperative guilds, [and] trade union branches." (300) The first public meeting, chaired by Hopkins in June 1934, was so full that an overflow meeting had to be arranged.(301)

The Children's Minimum Council (CMC) was also established in 1934 by Eva Hubbock, Chairman of the Family Endowment Society.(302) Miss Eleanor Rathbone, Independent M.P. for the English Universities became its Chairman.(303) The CMC aimed to stimulate improvements in social services, and was particularly concerned with childrens' nutrition. Its early demands were for free school milk, and the compulsory provision of school meals.(304) In July 1934 the CMC submitted to the Unemployment Assistance Board, a document entitled "The Scale of Needs", (305) which argued

that scales used for calculating unemployment benefit should be based on scientific estimates of the expenditure needed for healthy living. This was supported in August by a letter to the newspapers and the medical press by Hopkins, Mottram, John Boyd Orr, (306) Cowell, M'Gonigle and seven others and was also backed by a BMJ editorial. (307) The CMC document was supplemented in September by another entitled "Evidence on Malnutrition". (308)

One of the greatest problems for the government was the activity of John Boyd Orr. Orr had been a pupil and colleague of Cathcart. In 1913 he had become director of the new animal nutrition research institute in Aberdeen, (309) and was later a minor participant in the rickets controversy. He worked on rickets in pigs with his colleague Walter Elliot, (310) who was also a Conservative M.P., and argued that rickets was caused by a mineral deficiency. (311) Orr emphasised the role of minerals in human diets over many years and often spoke of the need for closer links between animal and human nutrition workers. (312) He was a major beneficiary of the Research Grants Committee of the Empire Marketing Board, (EMB) established in 1925 with Elliot as Chairman. (313) Orr's resources were further expanded with the establishment of the Imperial Bureau of Animal Nutrition at the Rowett 1929, which from 1931 published Nutrition Abstracts and Reviews. (314)

One project financed by the EMB and supervised by Orr was a demonstration of the nutritive value of milk. (315) He

also played a key role in a study of the nutrition of Kenyan natives, financed by the EMB and supervised by the Dietetics Sub-Committee of the Cabinet Committee of Civil Research.(316) Orr had great hopes for the EMB and was disappointed by the disbanding of the Research Grants Committee in 1933.(317) His increasing concern with human nutrition was coupled with an increasing concern with agricultural economics. He was involved with the Scottish National Development Council(SNDC)(318) and made a major contribution to a report on Scottish agriculture issued in 1934. This suggested that, "demand" for agricultural products should be taken to mean "the amount required to provide for the reasonable needs of every member of the community", and proposed that

...an enquiry would show that the total expenditure of the state on agriculture, on poor relief, and on public health would be the lowest under a system whereby the retail price of food would be sufficiently low to enable the poorest members of the community to obtain sufficient of the right kind of food...(319)

Elliot, now Minister of Agriculture, aimed in his 1933 Agricultural Marketing Act to make the Marketing Schemes more effective.(320) The Board of Trade was given powers to regulate imports of products governed by marketing schemes and, to provide data upon which such regulation could be based, the Market Supply Committee was established, under Lord Linlithgow.(321) Elliot helped arrange for Orr to prepare an estimate of the total national food requirements, if the whole population were to receive an adequate diet, which was carried out with the cooperation

of the Market Supply Committee and the Marketing Boards.

In Orr's 1934 Chadwick Lecture on "National Food Supply and its influence on Public Health", he dealt with the crisis in agriculture,(322) and the state of human nutrition in Britain. During the early 1930s allegations in parliament of widespread malnutrition were always countered with evidence to the contrary in Newman's annual reports.(323) Orr now challenged the evidence:

Some observers who have examined school children recently have reported... no evidence of serious malnutrition, and others report only about 2 to 4 per cent... of "poor nutrition"... But if we take as our standard, not the average, but the best, then the state of affairs does not appear to be satisfactory.(324)

He estimated on the basis of income that about 20% of the population must be living "near or below the threshold of adequate nutrition."(325) Orr became the main advocate of a reductionistic approach to nutrition which was fully developed in his book Food, Health and Income, (1936). His calculations were based on a claim of universal applicability of dietary standards, and his method "reduced" nutritional problems to lack of income.(326) Mellanby, now Secretary of the MRC, became conspicuously uninvolved in the increasingly political "Nutrition Movement", (327) and was effectively displaced by Orr as the leading public proponent of a natural-law approach to nutrition.

The scientific and medical opposition was still led by Cathcart, who was joined by Hutchison,(328) now an elder statesman of clinical medicine.(329) Cathcart, despite his

interest in calorie requirements had always been careful to avoid following the kind of procedure adopted by Orr.(330) Cathcart and Hutchison's arguments against the idea that inadequate nutrition was widespread and was caused by inadequate incomes were based upon the view of nutrition as a clinical state, in which food was but one of many components. This was an emphasis which Cathcart had not expressed before.(331) In 1935, for example, at a meeting of Medical Officers of Health, he declared:

...too often the assumption is made that food and nutrition are synonymous... This is certainly not the case. Nutrition connotes more than the effect of ingestion of even a perfect diet in adequate amounts... many factors other than food play important roles e.g. sleep, play, clothing, happiness...(332)

While arguing that there was little malnutrition in the clinical sense,(333) Cathcart continued his theme of the need for practical education in shopping and cooking.(334)

Another feature of the context of the later 1930s was the increasing interest in the international aspects of problems of nutrition and agriculture. Orr, Mellanby and Cathcart were all involved in various Committees of the League of Nations(335) and the Committee on Nutrition in the Colonial Empire.(336) Orr became most closely identified with the formulation of plans for comprehensive international reforms.(337) Mellanby, seeing the potential for new research, and for the the application of the "new knowledge", began to deploy resources of the Medical Research Council for the study of colonial problems.(338)

After Greenwood had resigned from the Advisory Committee Newman made several suggestions for a new Chairman, but Young was in no hurry to settle the matter.(339) It was realized that the report of the Economic Advisory Council (EAC) Committee on Scientific Research,(340) "The Need for Improved Nutrition of the People of Great Britain", by Hopkins and Mellanby, which was circulated within the Cabinet in mid 1934,(341) would have important implications for the future of the Advisory Committee.(342) This Report was in four sections- "Widespread Physical Defects of Nutritional Origin", "What is Wrong With the Peoples' Diet", "The Special Feeding Requirements of Particular Classes in the Community", and "The Need for a National Food Policy". The main recommendation was for a "Strong Committee of the Economic Advisory Council" which would

...enquire into the part played by defective nutrition in producing a low standard of physique... to report by what changes in diet these defects could be remedied and to suggest measures by which the state could ensure the introduction of such changes; and... to consider to what extent public policy in regard to public health, education and agriculture would require to be modified to give effect to a national food policy on these lines...(343)

This was not well received by the Ministry of Health. In a memorandum to Robinson, Newman asserted:

...this Mellanby essay... is irregular and unreliable... if... Hopkins and Mellanby wanted to advise... on the importance of vitamins they should have done so through the Minister's Advisory Committee... Instead of doing that, and carrying their medical colleagues with them, they have chosen to push out their little boat once more via... [this] lay committee. Ever since their "discovery" of vitamins they have thought of nothing else and no other problem... Secondly, they disregard the facts of national health and

nutrition...(344)

He went on to detail why he thought that the report was exaggerated. Robinson defended the Ministry's record when he advised Young:

The choice is... between the steady carrying out of... a sensible and practicable policy and embarkation upon an enquiry so huge and indefinite... that it is most doubtful whether any results... [obtained would be] better than those which can be obtained on the present lines of progress.(345)

Following a discussion between Robinson and Sir Warren Fisher,(346) of the Exchequer, Young hoped to make a joint submission to the cabinet with the Chancellor,(347) which would indicate the doubtfulness of Mellanby's case and would suggest that

...these questions of physique and general health... [should be] viewed comparatively [rather] than absolutely, and that nutrition, though of great moment, is only one element.(348)

The projected submission would suggest that a practical step forward would be to see if the Ministry of Health's

...machinery needs strengthening and if so how, and whether the political risks attendant on a more vigorous campaign of publicity and "gingering" in regard to nutrition should be faced.(349)

Robinson illustrated this as follows:

It is quite possible that the scientists could feed you or me for say five bob a week. [But]... the five bob diet might not be popular. Again, if we say the five bob diet is enough, Labour will have a beautiful subject for leaflets and speeches...(350)

The Chancellor, however, recommended that the matter be left in suspense.(351) Other Ministers were less upset than Young by the CSR report. Elliot agreed to Mellanby's

proposal for a new committee, but thought that it was undesirable that it should consider public health, education and agricultural policy, and suggested that it should rather conduct a food consumption survey.(352) The Minister of Labour also agreed with the setting up of a committee and suggested that it should consider what changes in the diet were necessary.(353)

In November 1934, a conference attended by the Ministers of Health, Labour, and Agriculture, and the Secretary of State for Scotland(354) recommended that a committee should be set up

...to inquire into the facts, quantitative and qualitative, in relation to the diet of the people, and to report as to any changes therein which appear desirable in the light of the modern advances in the knowledge of nutrition.(355)

The advantages and disadvantages of an EAC Committee, or of using the existing Advisory Committee, were discussed. It was suggested that the former option would

...be exempt from such attacks as had been made upon the Advisory Committee as "a Ministry of Health Committee" at the time of the controversy with the BMA.(356)

The decision was made after Young had consulted Baldwin in mid-November 1934.(357) Young advised that

The report of such a committee must have a strong political bearing. It is not the intention that it should be published, but if it did come to be published, which committee would bind the Government to a greater degree (possibly against its wishes) - a Departmental committee of the Ministry of Health, or a Committee of the Economic Advisory Council?... I should say... that there are frequent cases in which the reports to the Minister of Health have not been published.(358)

Due to these political factors,(359) Young preferred a

departmental committee and Baldwin agreed.(360) But this failed to satisfy Sir Daniel Hall,(361) Chairman of the EAC. He pressed for an EAC committee consisting of a few "specialists" and "non-specialists of high standing"(362) which would call others before it to give evidence.(363) After speaking with Young, Hall agreed to the departmental committee, offered to serve on it, and to provide a list of possible members.(364) He subsequently prepared a list of 16 names, which consisted mostly of eminent clinicians and laymen and women.(365) Newman opposed the appointment of such people.(366) He thought the only relevant names in Hall's list were those of Hopkins and Orr but rejected the idea that Orr could "represent agriculture":

...we had better not impose fresh burdens upon Sir John Orr, who in addition to his whole-time duties in Aberdeen, has more than whole-time duties for the Milk Marketing and Lady Astor's Milk Committee.(367)

He added that Magee had formerly worked at the Rowett, and was well aware of Orr's views. Newman also suggested to Robinson that, in setting up the new committee, the opportunity might be taken to drop Mottram and Lindsay "for domestic reasons that I need not explain."(368)

The new committee was appointed jointly by the Minister of Health and the Secretary of State for Scotland late in February 1935. The first person asked to be chairman refused the appointment.(369) By this time the Government was under pressure to finalise the arrangements.(370) Lord Luke(371) was offered the Chairmanship, and after some doubts, he accepted.(372) The

Secretary of State for Scotland wanted to appoint Orr,(373) to which Newman repeated his previous objections,(374) but to no avail.(375) Orr eagerly accepted appointment:

I am very glad that the National Government has set up this committee. In co-operation with the Market Supply Committee, this Institute(376) is conducting a preliminary enquiry on pretty much the same lines. The information which we are bringing together will be... available for the Advisory Committee.(377)

The Committee was appointed at the end of May 1935. The membership included Hopkins, Cathcart, Mellanby, Buchan, A.Bradford Hill, D.Hunter,(378) Mrs E.Barton, of the Women's Co-operative Guild who had been suggested by Hall,(379) Orr and Mrs Chalmers Watson appointed by the Scottish Office,(380) and representatives of the Ministries of Health, Agriculture, and Labour, the Boards of Education, Trade and Unemployment Assistance, the Market Supply Committee and the Welsh Board of Health.(381) The committee was launched quietly because the Minister of Health thought it undesirable to encourage publicity,(382) but nevertheless the Daily Herald, under the headline "Great Food Inquiry Ordered" reported:

The people of Britain are not being adequately fed. The Ministry of Health's... advisors have been warning... of this for years. Now at last the Ministry has decided to act... The setting up of the new committee has followed deep and dangerous rumblings in Whitehall. Behind the scenes things have been happening which have caused a radical revision of the official attitude towards what is the most critical public-health issue of today.(383)

Before the first meeting, Robinson informed Luke of the "general layout of the work"(384) which, he said, the Minister had in mind. The first thing was

...to find out what are the principle articles of food that are being consumed... in what relative quantities... A great deal of information is already available... particularly in the hands of the Market Supply Committee. If the Minister were chairman, the first thing he would do would be to appoint a sub-committee to find out what information is available... and to report what measures... should be taken to supplement the information...(385)

He suggested that another sub-committee, on which the "technicians" would be well represented, could consider whether "...changes in either quantity or quality of diet are desirable." If the main committee were satisfied that changes ought to be made

...then they will have to consider² how best these conclusions can be got across to the general population. This would be their main report to the Minister, who would then have to consider what administrative action to follow.(386)

The work proceeded along the lines proposed but was carried out by three rather than two sub-committees - the Statistical, the Economic and Social, and the Physiological.(387) In 1936 a memorandum on the nutritive value of milk was published,(388) and in May 1937, a general report of the progress of the committee was published,(389) which proposed and was followed by several investigations. Firstly an enquiry into the "cost of living" of families which was being planned by the Ministry of Labour, included, at the Committee's request, a question on the kind and amount of food purchased in each of four weeks during the year. Secondly, Professor Bowley,(390) embarked upon an analysis of 50,000 census schedules, in order to allow the classification of families into groups according to income per head and also according to income

per "man-value".(391) However, the affairs of the Committee were not unproblematic. There was, firstly the continuing difficulty of the lack of agreed dietary standards.(392) An additional source of major problems was Orr's Food, Health and Income, published in March 1936. According to Orr's autobiography, those involved in his project with the Market Supply Committee wanted to publish the information which they had compiled but the Government tried to suppress the document, and the civil servants involved were instructed to withdraw their cooperation.(393) Elliot evaded a question in the House of Commons concerning the matter,(394) and Orr decided to issue the report under his own name.(395) In Food, Health and Income estimates of the food consumed by six income groups were compared with estimates of food requirements.(396) The food requirements used were essentially those of H.K.Stiebeling,(397) of the American Government Bureau of Home Economics. Stiebeling had published tables showing not only calorie and protein requirements, but also requirements of calcium, phosphorus, iron, and vitamins A and C. A fat requirement was added to these.(398) These were taken to be not minimum requirements, but requirements for "perfect health".(399) The report also reviewed research on physique and incidence of diseases within different income groups, and among people living on different diets. The data on consumption and requirements were arranged on a "per head" instead of a "per man-value" basis as had previously been adopted by, for example, by Cathcart.(400) Orr explained that the

latter procedure had been rejected because:

The use of any man-value based on calorie requirements would have led to an underestimation of the cost of feeding children, since foods rich in first-class protein, vitamins or minerals, of which the requirements are greater for growing children than for adults, are the more expensive.(401)

He concluded that

The average diet of the poorest group, comprising 4½ million people, is... deficient in every constituent examined. The second group, comprising 9 million people is... deficient in all the vitamins and minerals considered. The third group, comprising another 9 million is deficient in several of the important vitamins and minerals.(402)

Orr's report immediately became the subject of questions in parliament, and was thereafter often mentioned in debates.(403) It was quickly referred to the Advisory Committee who told the Minister of Health, who was now Sir Kingsley Wood,(404) that the evidence available did not justify firm conclusions, and more information was required.(405) Orr had made a similar comment in the report itself which provided part of the Government's defence in a debate on an opposition motion in July 1936 which condemned the Government's failure "to take effective steps to deal with this grave and urgent problem of hunger and want in the midst of plenty."(406)

But according to a memorandum written in January 1938 by R.B.Cross, secretary to the Advisory Committee, the referral of Food Health and Income to it introduced a new dimension into its remit which adversely affected its deliberations. After dealing with the difficulties of interpreting the information which was being collected by

:

the committee, "in strict pursuance of the terms of reference", Cross observed:

Those terms of reference do not specifically refer to cost and they do not suggest investigation of the ascertained inadequacy (whether poverty, ignorance or both) or of the practical means of ensuring adequacy...(407)

and continued:

But the view is taken by some members... that the investigations are designed, primarily if not wholly, to investigate questions of cost and influence of family resources on nutrition in varying income groups - in other words the relations of food, health and income. It is suggested that as Sir John Orr's book, which approached the subject from that angle, was referred to them by the Minister, it is the committee's duty to see how the picture he draws can be endorsed or criticized in the light of the facts ascertained from a larger number of families...(408)

Cross's impression of Orr's investigation was that it aimed

...to support a pre-conceived theory, viz that of the two factors which may tend to under-nourishment (ignorance and poverty) the latter is by far the dominating one...(409)

and he was anxious that the committee would confirm Orr's results, for he concluded:

The position is very delicate and the temperature shows signs of rising. It has been said on the Committee that the Ministry of Health really has the last word on this. It is certainly true that not much help is derived from some other departments. The U.A.B. [Unemployment Assistance Board] for instance, no doubt recognise that an endorsement by an official Committee of the Orr-Lloyd assertions(410) would be very embarrassing... but their representative's only contribution to recent discussions has been a rather maladroit and crude statement of this fact, which caused eye-brows to be raised in various quarters!(411)

But Cross need not have been worried. The investigations and the work of the committee proceeded so slowly, to the

dissatisfaction some members,(412) that it failed to produce a report before the onset of war. But great care was taken to avoid giving opportunities for outside criticism. When the members were re-appointed for a further three years in 1938, Mr. Peete, Assistant Secretary in the Ministry advised Cross that publicity should be kept to a minimum:

The... disadvantage of issuing a press notice is that it will give fresh prominence to the committee at a stage when the comprehensive enquiries which they had recommended... remain far from completion... It may be that completion of the enquiries and preparation of a report will take another two years. Undue publicity at this juncture will give rise to requests, at least for preliminary results if not for a considered review of the situation, from those quarters anxious for speedy action on the part of government to remedy the alleged existence of widespread malnutrition...(413)

In addition, shortly before a BMA Conference on Nutrition in April 1939, Luke advised Cross:

You will notice that the BMA Nutritional Conference(414) is taking place... From those and certain other circles one hears rumours of the insinuation that the Nutrition Committee is side-tracking the subject... One realizes that the delay caused by the long wait in connection with the various diet surveys that have been made gives an opening for such suggestions, but I think we must avoid giving a further impetus to the innuendo by having too few meetings, and I think possibly it would be well to have sub-committee meetings in May and a main committee meeting in June or July at the latest.(415)

These were the last meetings of the ACN. Bowley's report was submitted to the statistical sub-committee, but the original project of the committee was never properly completed. When the time came to re-appoint the committee during the war (in mid-1941) the Ministry officials decided

that it would be best just to forget about its existence.(416)

3.11. STYLES OF THOUGHT IN NUTRITION AND THE THE ADVISORY COMMITTEE ON NUTRITION: SUMMARY AND DISCUSSION.

At the 1927 BMA Conference Mellanby envisaged that the "Board of Nutrition" he proposed could reduce conflict between nutrition experts, "unify" the teachings of "health societies", and propagate his version of the new knowledge of nutrition among medical men and the public.(417) As we have now seen, throughout the 1930s the Advisory Committee on Nutrition did little to satisfy these aspirations. Conflicts between advocates of a conservative and a natural-law approach to nutrition may be discerned in all the major activities of the ACN. Cathcart opposed the initial activities aimed at helping Medical Officers of Health, in favour of educating poor women in buying and cooking food.(418) Before the ACN was one year old Carnwath was able to recognize opposing camps represented by Cathcart and Mellanby. When the ACN attempted to formulate conclusions from MRC nutrition research, Cathcart blocked consensus on the conclusion which embodied the main element of Mellanby's reductionistic programme.(419) The memorandum on dental disease, which Mellanby believed his programme could eliminate, was abandoned when he became the only one in favour of it.(420) The proposal for a pamphlet on adult nutrition was abandoned even before drafting began. While the other members were, in principle, in agreement with this project, it was bluntly opposed by Cathcart because,

according to his conservative programme, such an activity was pointless.(421) When Nash proposed a project which would attempt to apply Cathcart's programme, Mellanby was apathetic.(422) When Mellanby and Mottram prepared schedules of recommended diets, and trespassed onto the ground of Cathcart's scientific work, they elicited a swift response from Cathcart.(423)

When the ACN was challenged from the outside - not by a "health society" as Mellanby might have expected, but by an organisation of the medical profession - the BMA, Cathcart was most indignant because the challenge was made on grounds related to his own scientific work. However we have seen that Cathcart was unable to impose his views on the joint conferences. The members of the ACN were not united - one was even on the other side (Mottram), while the others were much more ready to compromise.(424) Mellanby was "...perfectly ready to accept any statement..." about calories.(425) The ACN, far from serving to reduce conflict among nutrition experts was itself disrupted by conflicts, and there was insufficient agreement within the committee for it to exert any authority over outsiders.

We have seen that from the early days of the ACN, Cathcart was anxious that it should not fuel criticism of the government. He privately warned Ministry of Health officials of possible damaging political consequences of ACN activities.(426) In his work on energy requirements Cathcart had always stressed that it would not be possible

to generate figures of universal applicability.(427) During the controversy with the BMA, Cathcart and Greenwood were upset that the average figures used in ACN publications had been contradicted, but they also complained that the BMA, taking calorie requirement figures to be universally applicable had generated financial data, which was being used to criticise the Government.(428) As Cathcart was unable to retain his indignation with the BMA and was eventually forced to compromise, it would appear to be his desire to avoid political controversy that won the day. But the affair showed that Cathcart's authority with respect to energy requirements could be challenged, and so any work on energy requirements became, from Cathcart's point of view, a risky business. After the controversy with the BMA, Cathcart became far less concerned with the question of energy requirements than he had previously been.(429)

Due to the conflicts which have already been mentioned, by March 1933 Mellanby was evidently frustrated by the ACN,(430) but early in 1934, shortly after he had become Secretary of the MRC, and during the controversy with the BMA, he sought the support of the ACN for a new demonstration of the importance of vitamin rich foods in the diet.(431) He was again opposed by Cathcart, and also by Newman.(432) Mellanby attempted to make use of his membership of the EAC to further his cause, but was also dissatisfied by the outcome of this move.(433) But during the last phase of activity of the ACN, (after it had been re-constituted), Mellanby kept a low profile in comparison

with Boyd Orr and the main dichotomy among members of the ACN became that between Cathcart and Boyd Orr. Boyd Orr, like Mellanby, advocated a reductionistic approach to the study and application of nutrition, but unlike Mellanby, his approach was much more overtly political.(434) In opposition to the views of Boyd Orr and others who suggested that malnutrition was widespread and was due to poverty, Cathcart continued to insist that nutritional problems were due to ignorance and that they were best solved by teaching poor women how to purchase and prepare food.(435) To bolster his arguments in the later half of the 1930s Cathcart aligned himself with Hutchison, and adopted a very wide clinical concept of nutrition.(436) These arguments were quoted by government politicians in arguing against charges based on "Food, Health and Income".(437) Cathcart eventually began to speak more of "fitness" than of nutrition.(438) He became publicly more politically right-wing, and the moralistic and authoritarian elements of his thought became more pronounced. He not only instigated health education, but also compulsory keep-fit.(439) He illustrated his arguments by quoting Adolf Hitler and by referring to the achievements of the Hitler Youth Movement.(440)

At the end of the last Chapter I suggested that Cathcart, like Paton, his predecessor as Regius Professor of Physiology in Glasgow, used a conservative style of thought in defending his elite position against the challenge of a new group of professionalising

reductionistic biomedical scientists, of which Hopkins and Mellanby were key members. I suggested that while Paton's approach was sustained by his relationship with the medical profession, Cathcart's approach was sustained by his work on energy metabolism and requirements in military and industrial physiology and in nutrition.(441) The work on nutrition gave Cathcart international scientific recognition,(442) but this work was heavily cut-back in 1931,(443) and when he resigned from the Chairmanship of the MRC's Nutrition Committee, he was disappointed with the lack of support which his work had received.(444) All this work was drawing to a close by the late 1930s.(445) With Cathcart's final public alignment with clinical medicine which accompanied his de-emphasis on calories, he may be said to have returned to the "roots" of Glaswegian physiology, after a period during which he had, with some success, eased away from the historical connection.

In view of Cathcart's easing away from clinical medicine, I would suggest that the alignment of the Glasgow Group with wider political conservative elements in society must also be referred to in explanation of the origins of their style of thought. Over the first five decades of the Twentieth Century the social thought of Paton, Findlay and later Cathcart, provided arguments which could be used by those who opposed radical interventionist policies to deal with the social problems.(446) The only example of the Glasgow Group giving a degree of support for large-scale interventionist policies is that of Findlay and Paton's

support for rehousing, but even here, as we noted earlier, their stress on "maternal efficiency" and hereditary factors could strengthen the hand of the opposition.(447) But in general, I would suggest that the emphases on the inapplicability of the methods of inorganic chemistry to living organisms, the unknown and unknowable nature of the living process, and the uniqueness of each individual, were all sustained partly because they made the use of scientifically devised, universally applicable solutions to social problems impossible.

Before closing Chapter Three, it is important to clarify the implications of the above analysis. I have not intended to imply that it was styles of thought as such which constrained the behaviour of Mellanby and Cathcart and disrupted the ACN. Styles of thought should be seen as resources which they used in the pursuance of their interests. The importance of Cathcart and Mellanby is that it appears that their interests vis-a-vis one another were fairly consistently expressed by contrasting styles. They did not always use the same style when pursuing their interests with respect to others. For example, when Mellanby attempted to exert control over the Dunn Nutritional Laboratory after he became Secretary of the Medical Research Council he accused the workers there of being out-of-touch irresponsible laboratory workers, just as he had been accused of such crimes some fifteen years earlier by Paton and Findlay.(448) Furthermore, others who were in more ambiguous positions than Mellanby and Cathcart used different styles of thought more freely at different

times and in different contexts. Mottram, for example, unlike Mellanby, had never done any remarkable scientific work, could expect little professional advancement, and had to make the best of his position as Professor of Physiology at a domestic science college. At times he perceived it to be in his interests to align himself with Mellanby, as when he drafted the memorandum on dental health, at other times, as when he supported Nash, he was aligned with Cathcart. Finally, it is important to note that the same style can be invoked at different times and in different contexts in support of different positions. Thus during the controversy with the BMA, Greenwood feared the criticisms of the government which could follow the BMA invoking the "wisdom of the body" (i.e. clinical judgement)(449) in order to support their position, but later, as we have seen, Cathcart and Hutchison's use of "clinical judgements" was a source of support for the government.

In the following Chapters we will be dealing in the main with actors who were in positions more akin to that of Mottram rather than those of Mellanby and Cathcart - they are men and women who, during a period of rapid social change, were more concerned to "make out" than to pursue or defend a particular position. There is less evidence of two consistently and comprehensively opposed camps which provide a structure for our story. In these circumstances less "pure" "styles of thought" will be less consistently expressed, and therefore analysis in terms of "styles of thought" is less helpful.

CHAPTER FOUR: THE WARTIME ESTABLISHMENT AND DEVELOPMENT OF
THE NUTRITION SOCIETY.

4.1. INTRODUCTION.

Soon after Britain declared war a Ministry of Food was established, and towards the end of November 1939 a Food Policy Committee chaired by the Lord Privy Seal was set up by the War Cabinet.(01) Wartime food policy had been under consideration since 1936 when the Food (Defence Plans) Department of the Board of Trade was established, but this body was concerned with "food control" rather than nutritional considerations.(02) The ACN ceased to meet but in mid-October 1939, in order to help Walter Elliot,(03) the Minister of Health to comment on the proposed food policy, Hopkins, Mellanby, Cathcart and Orr, with Luke, were invited to an informal meeting to give their views. Despite the previous lack of consensus within the ACN Magee recorded that the "body of physiologists", "profoundly shocked by the inadequacy of the proposed rations of fat", unanimously recommended that economic use should be made of all animal fats, and also that the price of milk should be decreased, and the extraction rate of flour raised.(04)

In December 1939, Elliot told a further meeting of the physiologists,(05) which had been called by the Secretary of State for Scotland,(06) that he had found their advice useful and that the original food policy had been modified.(07) This meeting was told that questions were being asked about special diets for invalids,(08) and following a suggestion from Mellanby, it was agreed that

the MRC would set up a Committee on Special Diets to consider the problem.(09) As at the previous meeting, the "physiologists" seemed to be united, and were reported to have agreed that "a change in diet of the people is highly desirable, and the war presented an opportunity, which should be taken to bring about a change."(10)

In June 1940, Mr Attlee appointed a Scientific Food Committee to "consider and advise upon problems of national food production..." and to report to the Food Policy Committee of the War Cabinet.(11) Sir William Bragg,(12) President of the Royal Society was appointed Chairman, and Cathcart, Mellanby, and Orr were among the members.(13) But while Cathcart, Mellanby, and Orr and a few others were given these roles in formulating food policy, there were many other nutrition scientists who had no such positions, and, as we will see, they soon began to organise independently to apply their work to the war effort. The responses of Mellanby and Orr to this movement, resulted in the foundation of the Nutrition Society.

4.2. THE INFORMAL CONFERENCES OF NUTRITION WORKERS.

From October 1940, on the initiative of S.K.Kon,(14) a research worker at the National Institute for Research into Dairying (NIRD),(15) a series of "Informal Conferences of Nutrition Workers" were organised which took place at monthly intervals.(16) Kon acted as secretary for the group and the agendas he circulated reminded members that the conferences were

...intended to be informal and confidential and

are arranged for an interchange of information and opinions. Members meet as individuals and not as representatives of scientific or other bodies.(17)

The main activity of the conferences was however to prepare reports and recommendations which were sent to Government Departments. The main business of the fourth conference, for example, was to consider the effect of cooking on the vitamin content of food.(18) It was decided to condense the papers which were discussed into "a form which might be useful to the Ministries of Health and Food" and one member of the conference(19) also volunteered to send the document to "certain army and navy authorities to whom they would be of interest." (20) The discussion also led to the appointment of four members to prepare a report on the pro-vitamin A value of carotene,(21) to be presented to the Ministries of Health and Food, and to the Bragg Committee. This report included suggestions of "useful problems of research." (22) The meeting also discussed a report on possible uses of dried milk,(23) which recommended that imports of this food be increased, that it be sold in grocers' shops and used in communal feeding. The report also warned that

In Australia and New Zealand the buttermaking season is at its peak. Unless a decision is sent to these countries soon, much skim milk will not be dried, and we shall lose the opportunity of importing it for another 10 or 11 months... The British Government is fighting an enemy who is doing his best to starve us out. To waste a nutritionally first class and relatively cheap foodstuff like skim milk... is assisting the enemy.(24)

These recommendations were strongly and unanimously

endorsed and W.P.Kennedy,(25) who was present as a representative of Magee for the Ministry of Health, intimated that his Ministry was "aware of the danger of calcium deficiency and would consider sympathetically the importation of dried skim milk from that point of view."(26) H.D.Kay,(27) Director of the NIRD was asked to contact Jack Drummond,(28) Scientific Adviser to the Ministry of Food, and to "acquaint him with the meeting's views" on this subject.(29) The minutes of the Fifth Meeting, held in January 1941 suggest that this liaison was actually carried out by Kon, who reported a conversation between himself and Drummond in which Drummond had said that he was "very pleased to have the support of the conference in this matter."(30) However the minutes of the same meeting also report that there was

...general regret... that the members connected with official bodies were not present at the meeting.(31)

The initiative for the withdrawal of official involvement in the conferences which is referred to here had come from Mellanby. At the start of the war he had hoped to become government nutrition adviser,(32) and had since assumed this position,(33) which he was now attempting to safeguard.(34) In February 1941 he issued a memorandum to B.S.Platt,(35) (who worked on nutrition at the National Institute of Medical Research), E.M.Hume,(36) of the Lister Institute, and L.J.Harris, of the Dunn Nutrition Laboratory.(37) The memorandum was also issued to Chick and S.S.Zilva(38) of the Lister Institute for their

information. Mellanby explained:

...one of the official duties of the MRC is to assist other Government Departments by supplying technical advice and undertaking necessary investigations. Any attempt on the part of an outside body to fulfil this same responsibility; particularly with the Council's own staff, can only lead to confusion... The Council's organisation provides a channel through which members of their staff can assist the Government. If the work of such members at any time gives results which they regard as of practical importance, especially in the present emergency, they should communicate these either to the Secretary of the Accessory Food Factors Committee or directly to me... Work for other bodies than the Council... must not be undertaken without express authority... the results of all research financed by the MRC ought first to be forwarded to that body and permission is required to pass them on to other organisations including Government Departments.(39).

Harris sought to reassure Mellanby, and informed him that he and his colleagues had found it

...stimulating to meet other active laboratory workers for exchange of views, and personally I feel it has been worth while also as helping to crystallise one's ideas... I take it that there is no objection to our attending these conferences subject to the need for reticence about confidential work.(40)

Zilva strongly objected to Mellanby's letter. Since the letter was not addressed directly to himself, he commented to Mellanby:

I gather from this that I am absolved from taking part in this dynamic and patriotic group of scientific workers. So the "Conference" that... twig of the Rome-Berlin axis, has already begun sprouting. I hope, to use the axis parlance, that this young and virile body with its quislings is not setting out to put a senescent and plutocratic body like the MRC in the shade. You never know what enthusiasms lying dormant in peace time may not be activated by a wartime atmosphere! The circular letter ought to open the eyes of the sensible participants.(41)

Harris showed Mellanby's letter to Sir Charles Martin,(42)

Chairman of the MRC's Nutrition Committee, and Martin wrote to Mellanby in Harris's support:

A ruling to the effect that those employed by the MRC must not take part in these Conferences... would be regarded as a handicap and, I believe, [would be] detrimental to the public good... I should think that the procedure of the Conferences could be arranged so as to avoid the risk of... depriving these workers of the stimulus, expert knowledge and scientific comradeship of free members of the society.(43)

But Mellanby was unmoved, and told Harris that

So long... as the conference regards as one of its primary objects giving advice to Government Departments or instigating investigations among members of the Council's staff for this end, these members must not attend. It would be clearly impossible for the staff members to participate in scientific discussion and at the same meeting dissociate themselves from decisions to advise Government Departments on problems of nutrition.(44)

Mellanby's actions were unpopular, as is clear from a letter which he wrote to Orr in mid-May 1941:

I understand from Thomson [Mellanby's assistant] that you recently told him that there were complaints at Cambridge being made that I was preventing members of the staff of the Medical Research Council from attending meetings or conferences dealing with nutritional problems. I think he probably explained to you what the situation really is and that this accusation is completely untrue.(45)

Mellanby sent Orr a copy of the original circular letter and asked him to tell his informant the truth. Orr, in his reply to Mellanby stated that he agreed with the circular letter but told Mellanby that while he had never attended the Conferences, he had thought that they were a good idea. He had also

...suggested to the Secretary [Kon] that those who attended the Conference should form a Nutrition Society on the same lines as the

Physiological Society. What I had in mind has been in the minds of two or three of us for some time now since the outbreak of war. I am sure that you would have no objection to MRC personnel being members of such a Society which would not raise any of the difficulties which have evidently arisen through lack of administrative experience from the meetings of the Conference.(46)

Orr asked Mellanby if he agreed with the idea of a Nutrition Society, and the following day sent a further letter which intimated:

I have had somewhat similar trouble with a group of enthusiastic people in Scotland and am putting myself to a good deal of trouble, including a visit to both Glasgow and Edinburgh, to keep the movement on the right lines.(47)

This probably refers to Orr's involvement in the Scottish branches of the Childrens' Nutrition Council (CNC) a pressure group which was formed from the Childrens' Minimum Committee and the Committee Against Malnutrition early in the war.(48) The CNC was engaged in conducting dietary surveys, and educational and agitational activities.(49) Orr was Honorary President of the Glasgow and Aberdeen branches.(50) In his second letter to Mellanby Orr also repeated the suggestion that "a Nutrition Society on the lines of other scientific groups will meet the situation".(51) In reply Mellanby told Orr that he agreed with the idea of a Nutrition Society, but irritably pointed out that that had not been the point of his letter which had been intended to kill false rumours.(52) A few weeks after this exchange, Orr called on Mellanby, and discussed the question of forming a Nutrition Society. After the meeting Mellanby recorded a minute which stated "I told him

I'd support him in initiating a society."(53)

At the beginning of the war Orr had suggested to Mellanby that advice on nutrition should be provided by a joint committee of "nutritional and agricultural experts, the smaller the better..."(54) Subsequently he was probably less satisfied with his wartime duties than Mellanby because he continued his campaign for a food and agricultural ^{policy} based on nutritional needs in much the same way as before the war.(55) That is, he used what "inside" channels he could,(56) but he also maintained links with "outsider" groups.(57) He spoke publicly about the importance of a wartime food policy in which agricultural production was guided by the nutritional needs of the population,(58) wrote books on the subject,(59) and was involved with the CNC as already mentioned. Although Orr's involvement in policy making was sometimes referred to in parliament as a means of deflecting criticism of the Government,(60) he was thought by colleagues to have been somewhat left out of the wartime food administration.(61) For Orr the formation of the Nutrition Society was a means by which his campaign for a food and agricultural policy based on nutritional needs could be advanced. In particular, it appears from the way he presented the case for the Society, he (and others) hoped that it would help to foster greater interchange between agricultural and medical nutrition scientists.(62)

4.3. THE FOUNDATION OF THE NUTRITION SOCIETY.

In early June 1941, Orr wrote to Kon, to arrange a

meeting to discuss the possibility of forming a Nutrition Society.(63) He told Kon:

I hear your Nutrition Conference Scheme is not working very well. I have been discussing with one or two people the idea of forming a properly constituted society and am considering taking the initiative and issuing a circular letter to a number of people who I think would be interested.(64)

After meeting Orr Kon went to Cambridge. He discussed the idea of forming a Nutrition Society with the nutrition workers whom he met there and reported to Orr:

I had a talk... with McCance,(65) Harris and his colleagues and the Lister people,(66) and the general feeling was that what you are planning will be a most satisfactory solution...(67)

Orr drafted a circular letter proposing the formation of a Nutrition Society, and sent it to C.J.Martin for comments.(68) The letter mentions that there had been talk of forming a Nutrition Society before the war,(69) and continued:

The question has... again been raised and there are a considerable number of research workers and others in favour... Such meetings should serve a useful purpose, especially if workers studying different aspects of the same problem in agricultural and medical institutions meet and help each other with information and constructive criticism... the best procedure would be to form a Society on the lines of the Physiological and the Biochemical Societies, although there would be no question of publishing a journal in the meantime.(70)

Orr suggested that in view of the difficulty of travelling, it might be convenient to form English and Scottish branches which would meet separately but which would maintain contact during the war by exchanging notes on papers and discussions. He asked Martin to suggest who

should be asked to sign the circular letter before giving it wider publicity, and besides himself and Orr, Martin suggested Chick, Drummond, Mellanby, Harris, Hopkins, Cathcart, Kay, R.Peters,(71) Professor of Biochemistry at Oxford, J.Hammond,(72) Professor of Agriculture at Cambridge, Sir Robert McCarrison,(73) of Oxford, and N.C.Wright,(74) Director of the Hannah Dairy Research Institute near Ayr.(75) Martin thought that "animal husbandry" was under-represented in this list and he stressed that Mellanby's name should be secured for "political reasons".(76)

Orr appears to have invited all of these to sign the circular letter except McCarrison and Wright.(77) In addition he invited J.Barcroft,(78) the Chairman of the Food Investigation Board.(79) He asked for comments, and intimated his intention to give the letter wider publicity before calling a meeting. They all agreed to be signatories apart from Cathcart, who neither signed the circular letter nor became a member of the Nutrition Society.(80) Orr asked Martin and Chick for advice on who the replies to the circular letter should be sent to:

Would it be better to have them sent here [the Rowett] or to have those in England sent to yourself or someone else in London or Cambridge?(81)

Martin replied,

We [himself and Chick] think that as there has been some unpleasantness in the south owing to the efforts of some and the intransigence of E.M., [Mellanby] we think that it would be better if this proposal emanated from as far north as possible!... If it goes, an energetic secretary domiciled in a latitude less than 57 degrees can

be if necessary chosen.(82)

Mellanby agreed to sign the letter but said that he could see great difficulties in

...getting the right people into it. Of the people you mention... namely Hopkins, Martin, Peters, Drummond and Cathcart, only Peters would be an active worker in driving any scheme forward. I am not sure that even he would be effective. He might, however run it with the assistance of Sinclair(83) and others in his laboratory. I assume that you would run your own Scottish branch and that would be very good. The best man to do the donkey work in England would be Bacharach(84) of Glaxo, but I doubt whether he would be suitable to many people although he is a good organiser with plenty of drive.(85)

Other nutrition scientists were more enthusiastic. Drummond agreed to be associated with the venture, and he told Orr that he had thought for a long time that a body similar to the American Institute of Nutrition was needed in Britain.(86) Harris replied that he was honoured to be asked to sign the circular letter, and suggested that a comment should be added after the mention of the Physiological and Biochemical Societies

...to convey a hint that discussion, information and constructive criticism mentioned in the first paragraph would be a more important function, especially in wartime, than reading strings of unconnected communications, which rather typify the two other societies... it would be nice if people got the impression right from the start that this is not just another society at which "communications" are "presented" for publication.(87)

Orr agreed with this sentiment, for he told Harris that

I will be very much disappointed if the Society meets for the reading of a string of unconnected communications. We may be at the birth of what will prove to be a very important body,(88)

and in reference to the relationship between the proposed

Society and the established Food Group of the Society of the Chemical Industry,(89) Orr told Harris:

There is room for both societies. The chemists would deal with the biochemical aspects, the effects of preservation etc., while... [the Nutrition Society] would be dealing with the broader issues, the physiological and clinical aspects, and I hope, when we get on our feet, the social and economic aspect of nutrition.(90)

Orr had also asked Harris who the English replies to the circular letter should be sent to,(91) and in reply Harris offered to take on the secretarial work of the "southern division", with his assistant, Miss E.M.Cruikshank.(92) Harris suggested that Orr could consult the Lister Institute, but thought that their people were too busy with Nutrition Abstracts and Reviews, (93) and were handicapped due to lack of office space.(94) In a later letter Harris told Orr that he'd met Miss Hume of the Lister Institute(95) who had confirmed that her colleagues were too busy, and he repeated his offer of his own and Miss Cruikshank's help.(96)

Kay was enthusiastic about Orr's proposals, and echoed Orr's emphasis on the relationship between agricultural and other nutrition workers. Kay thought that the Informal Conferences

...clearly indicate the need for such a society and its real value in wartime... The war has accentuated the situation that some of us have been worried by in the past - that many important aspects of nutrition fall between two stools of medicine and agriculture and have largely been ignored by both types of worker. Those of us interested in agriculture, and in animal and human nutrition know very well that the relationship between agricultural practice and human health is still poorly realized by a large section even of nutritional workers and hardly at

all by most of our administrators. We need as many animal nutrition workers in the society as possible. All members of the informal nutrition group would, I suppose, be invited to join the society.(97)

Peters agreed to his name being added to the signatories but suggested that a Nutrition Group be formed as part of the Biochemical Society:

I am inclined to think that it is a pity (unless it can be avoided) to weaken the Biochemical Society by taking out of it a group of workers, and at the same time there is something to be said for maintenance of close touch between nutrition workers and biochemists.(98)

Of the other signatories suggested by Martin,(99) Hammond and Hopkins also agreed to sign the circular letter, but there is no record of their replies to Orr.

Orr wrote to Magee to inform him of his plans. He asked Magee for his views and continued:

I presume that, although you are an official of the Ministry, you would be free to join... I thought it better... not to ask you to take an active part in forming it because there were certain difficulties in connection with the informal conferences from which the society... will originate.(100)

Orr originally intended to circulate the letter before proceeding further, but instead decided to call a meeting which took place at the Royal Institution towards the end of July 1941. Kon, Sinclair, Martin, Harris, Platt, Magee, Bacharach, Cowell, Kay, Drummond, Mellanby, Barcroft, F.Kidd,(101) A.St.G.Huggett,(102) Professor of Physiology of St Mary's Hospital Medical School, and H.E.Woodman(103) of the Cambridge School of Agriculture were formally invited to the meeting, and Kon was asked to inform any others who had attended the Informal Conferences. Orr

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especially encouraged Woodman to attend, stressing:

It is desirable that there should be two or three of the the senior agricultural workers because research on the nutrition of animals is now a very important part of the science.(104)

About 27 workers(105) attended the meeting, from 15 centres.(106) The discussion ranged over the possibility of forming a nutrition group of an established society,(107) the need for collaboration with the American Institute of Nutrition,(108) and the Food Group of the Society of the Chemical Industry, the nature of the scientific meetings of the new society,(109) and qualifications for membership.(110) A Committee of thirteen was elected,(111) of which Orr became Chairman, Harris, Honorary Secretary, Bacharach, Treasurer, and Cruikshank, assistant secretary.(112) Cruikshank summed up the minutes of the meeting as follows:

It was felt that the main object of the new Society should be to provide a common meeting place for workers in varied fields of nutrition, e.g. physiological, biochemical, agricultural, medical sociological, economic and public health. The main function of the society under present circumstances should be to hold conferences to discuss special themes, particularly those of importance during the war. The meeting agreed that it would be useful during the war to have a separate Scottish Group...(113)

At the first committee meeting held in early August 1941 an Executive Committee(EC) was elected consisting of Harris, Bacharach, Cruikshank, Orr, Platt, H.P.Himsworth,(114) Professor of Medicine at the London University College Medical School, H.H.Green,(115) Head of the Biochemistry Department of the Ministry of Agriculture Veterinary Laboratory at Weybridge, and Hammond as

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chairman. The objectives of the society were discussed. Chick suggested "to effect a union between workers in the chemical, medical, physiological and agricultural branches of nutrition", (116) and Bacharach, "to advance the scientific study of nutrition and its application to practical problems of human and animal dietaries (or health)." (117) The EC later settled on "to advance the scientific study of nutrition and its implications to the maintenance of human and animal health." (118)

When writing to Cruikshank after the inaugural meeting Orr stressed the importance of preventing "faddists and cranks" from joining the Society. (119) With this in mind membership of the Society was defined as being open to

...all those whose work has contributed to the scientific knowledge of nutrition whether such work has been in the laboratory, the field or the clinic, and experimental, clinical, agricultural or statistical in nature. (120)

The membership rule was interpreted loosely however to permit entry to those whose work was in the application rather than the production of nutritional knowledge. This policy created some disquiet during 1942-3, but after much discussion the original definition was retained, and its interpretation in doubtful cases was left to the electing committee. (121)

The ambiguous definition which was given to the objectives of the Society left open the question of the actual activities that the Society would undertake. We will see in the following sections that the questions of the character of scientific meetings, and of how and whether

the Society should participate in the formulation of food policy and the co-ordination of research, were questions which were hotly debated during the early years of the Society.

4.4. NUTRITION: SCIENCE OR POLITICS?

As we have seen, the Nutrition Society was formed because of conflicts caused by the Informal Conferences issuing recommendations which were directed towards the Government. Mellanby seems to have been particularly offended by the activities of the Conferences. However, a letter from H.M.Sinclair(122) to Orr, at the time that Orr was planning the Nutrition Society indicates that there was also some discontent among the Conference participants. Sinclair told Orr:

I have heard that you are about to revive the Informal Nutrition Conferences which used to be held about once a month until recently. When they first started, in October last, these conferences were of great value. But gradually the group expanded, and came to include a few people whose interests were in politics and not in nutrition. Several of us felt that it was time we had a purge of the group, and I hope you are doing this.(123)

But Orr clearly intended that the Nutrition Society, like the Informal Conferences would be concerned with problems related to the war effort, and that it would contribute in some way towards the formulation of national food policy.(124) However Orr was cautious, and he suggested to Cruikshank after the inaugural meeting that it might be wise to start with one or two meetings on "rather purely scientific subjects".(125) Nevertheless, the early

scientific meetings were all, to some degree, policy-orientated. The first was on "The Evaluation of Nutritional Status" and was held in Cambridge in October 1941.(126) This was followed by a meeting on "Food Production and Distribution in Relation to Nutritional Needs" in London in February 1942.(127) The third and fourth meetings were held by the Scottish Group, in March and May 1942, and were concerned with "Food Supplies in Relation to Human Needs".(128)

It soon became apparent that the desire for exclusively policy-orientated meetings was not universal. This is indicated by a discussion at the third General Committee meeting in January 1942 on whether later meetings should include some with "unrestricted short papers".(129) By the time of the Fifth Scientific Meeting, which was held in London in May 1942 on "Problems of Collective Feeding in Wartime", (130) some more overt dissent was being voiced. The Committee had to contend both with the demands of those who wished the Society to be more involved in public policy making and those who wanted to move away from practical concerns and to have more "scientific" meetings.

Harris reported to the Committee meeting, which was held after the meeting on "Collective Feeding", that he had received a letter from N.W.Pirie, F.E.le Gros Clark, and F.Yates,(131) which suggested that in future papers should be pre-circulated, and that reports and conclusions should be drawn up after each conference. While these correspondents realized that their proposals might be

opposed on the grounds of cost, they argued

...the only justification for setting up a society such as ours at the present time is that its deliberations are, or may be, of considerable practical importance. The meetings should either be looked on as of first rate importance, or they should not be held at all. If they are being held, no effort should be spared to make them as productive and conclusive as possible.(132)

le Gros Clark had been secretary of the Committee Against Malnutrition during the 1930s.(133) He was now centrally involved in the CNC, together with Pirie, who had been a participant in the Informal Conferences.(134) They evidently wished the Nutrition Society to take on a similar role to that of the Informal Conferences, and to participate in this way in the "nutrition movement" which the CNC was attempting to foster.(135)

However, at the same meeting at which Pirie et al's letter was reported, Harris also reported a letter from B.S. Platt,(136) who was Mellanby's assistant with regard to nutrition(137) and who complained that the "Collective Feeding" meeting was too "popular".(138) The conference had started with the reading of a letter from Orr which congratulated Lord Woolton,(139) the Minister of Food, on the success of his work.(140) The opening address, a report of which had appeared the following day in the lay press,(141) was given by Lord Woolton, and the morning session had been chaired by Dowager Lady Reading, Chairman of the Women's Voluntary Service.(142) During the discussion le Gros Clark had taken the opportunity to pay tribute to Soviet achievements in "centralised feeding" since 1925.(143) Barcroft had summed up at the end of the

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conference as follows:

Lord Woolton expects the Nutrition Society to help him. He certainly can rely on us to do this in every way possible. Today's discussions have shown how it can be achieved. There is gathered at the meeting an enormous fund of experience and the society could, better than any other in the country, pool information and weld into a coherent whole the knowledge which is available.(144)

The letters of both Platt and Pirie and his colleagues were referred to a later meeting,(145) but soon there were other complaints about the activities of the Society. In June 1942 Magee wrote to Harris to tell him that due particularly to the meeting on "Collective Feeding", he and others had been "feeling anxious as to the drift the affairs of the society were taking." (146) Magee was asked to draft a letter which could be circulated to the committee, but instead he drafted a letter which he sent to others to sign. He submitted this with a total of 13 signatories.(147) This letter complained that the "Collective Feeding" conference had had the character of a public meeting and suggested that there was a "sufficient wealth of talent" within the society for the "proper conduct of its own meetings".(148) Harris wrote to Magee and his co-signatories to explain that the committee felt that collective feeding was a very important issue, and that they had felt that without a brief statement of how catering was organised, the discussion would be rather "in the air". The Minister had brought his own reporter, who it was difficult to exclude from the meeting.(149) Magee replied with a further letter:

...my fear is the introduction of politics into the Society. I feel that having had a politician to open a meeting, however honourable he may be, you have opened the door to the introduction of political discussions. If this were to happen neither I nor any of the other Civil Servants could remain in the Society.

Since coming to the Ministry I have had many experiences, mainly unpleasant in the battleground between science and politics, and I want to see the Society steer clear of all such complications.(150)

Magee wanted the discussions to be limited to "the facts of nutrition science", and he continued:

In the case of invited non-member speakers I should go so far as to vet their scripts when the subject is likely to tempt the politically minded to ventilate their views.(151)

Harris's reply to this concentrated on Magee's final points:

I don't think there is any risk of political issues being introduced into the Society. The Minister of Food was not there to represent one political view or another but merely to give us expert information about catering as seen by the Head of the Department concerned. As during the war members of the government have dropped political differences, and are concentrating on the war effort, it seems unlikely that politics would be obtruded.(152)

This correspondence was discussed at the committee meeting in August 1942, and it was concluded that

...it was a good principle to choose the chairmen from the membership... but that the meeting on communal feeding was a special occasion and reasonable latitude should be given to the committee in the choice of speakers and a chairman in the exceptional circumstances now prevailing.(153)

In the circumstances of the complaints of Magee and his co-signatories, the proposals of Pirie and his colleagues were unlikely to make much impact. On the question of pre-circulation of papers it was noted that this was being

practised by the Scottish Group, and it was therefore decided to wait and see if this would be successful while in the meantime, circulating 200 word summaries.(154) Regarding the request for statements of conclusions, it was suggested that this was met by the chairman's practice of summing up.(155)

Further correspondence discussed at the August 1942 Committee meeting was a letter from Miss M. Olliver(156) a chemist from Chivers Foods, which suggested that "meetings should be more comprehensive in range of topics".(157) The committee agreed that the suggestions which she made would be useful "after priority had been given to problems of war-time urgency".(158) In addition there was a letter from Professor A.St.G. Huggett,(159) a committee member who was unable to be present. Huggett thought that

...the present policy of symposia was being overdone, and... he would like to see more meetings in which original papers were given...(160)

He suggested discussions on topics such as "The role of iron in metabolism", and "The Nutritional factors in growth of cancer". There is no indication in the minutes that Huggett's views were discussed at this time.

However Huggett did initiate a new phase of discussion about the nature of Nutrition Society meetings with a letter to Harris in June 1943.(161) He told Harris:

...as I see it, we initiated the Society for certain purposes, accompanied by a wartime policy of having symposia on questions of national importance while the war is on, and the policy has now been pursued for about two years with great success. I feel now we can take a further step, however, in our policy and conduct of

Meetings. We can assume that for practical purposes none of the Meetings we hold are going to influence the war-time nutrition policy of the Government, but that we have affected education in one way or another with regard to the public, which has been of benefit to the country; that the nutritional result of the war, in so far as it effects England, is known already, and it now merely remains for us to switch over to a peace-time policy.(162)

Huggett suggested that there were two possible ways forward for the society - it could either split into sections to consider different aspects of nutrition or start having different types of meetings for the whole society

...some of which will interest one section of the membership but not others, whereas another type may interest another group of people altogether and may be above the heads of some of the members.(163)

Huggett was in favour of the second suggestion, feeling that it was premature to sectionalize the society. As he saw it, the meetings to date had "bordered on propaganda", but it was his view that the society

...might have original papers as well as symposia which are not directly connected with war problems and which are more scientific, such... as nutritional factors concerned in gut absorption; the intermediate metabolic proteins, the mechanism of action of vitamins, disorders of fat metabolism, nutrition of bacteria etc. These are fairly wide headings which might be split up even more such as the role of ascorbic acid, the factors connected with growth, and aspects of the scientific side which at present we are not touching.(164)

Huggett said that he knew that there was a demand for such meetings from conversations with friends, and suggested that the policy could be introduced gradually by "...having a scientific meeting alternating with a propaganda meeting, or scientific and applied science alternating".(165)

When the First English Group Committee Meeting(166) considered Huggett's suggestions in July 1943, they were generally in favour of continuing as before, but decided to ask the Programmes and Publications Sub-Committee(167) to consider the possibility of holding some "more specialized or technical meetings".(168) During the discussion of this matter at the following Programmes and Publications Sub-Committee meeting it was pointed out that "the financial status of the Society would not permit additional fixtures...", so that a special Technical Section of the society would need to be formed with an additional subscription for those intending to attend its meetings.(169) It was decided to remit this question to the main committee with the suggestion that one or more technical meetings could be held as an experiment. The next Committee meeting agreed to this idea, and decided to circulate a questionnaire to members concerning the proposed Technical Section,(170) but the Council postponed the experimental "technical" meeting until the results of the questionnaire were known.(171) In July 1944 when the questionnaire results were finally discussed at an English Group Committee meeting, a summary by Harris claimed that there was an overwhelming approval of the "conference meetings of the kind so far organised".(172) There was also a substantial number of the members in favour of starting a technical section, but this was played down.(173) Harris summarized the obstacles which many saw to the creation of a Technical Section as follows:

- a) insufficient paper for publishing reports in the proceedings.
- b) increase in the subs would be necessary.
- c) overlapping with other societies who had been assured that this would be avoided when the Nutrition Society was formed.(174)

Harris provided a list of some of those who recommended postponement until publication of the papers read at Technical meetings was possible, and a list of some who objected on the grounds of overlapping.(175) He also noted that there had been official or semi-official enquiries from the Biochemical and other societies about what was going on.(176) The English Group Committee decided that "...the present time is inopportune for making any decision..." but that the position should be explored after the war.(177) The Council agreed that no action should be taken.

The character of Nutrition Society meetings remained then, essentially unchanged throughout the war. They were conferences on a particular (usually practical) theme, and were often policy-orientated. There was never any attempt to reach a Nutrition Society "line" on any subject which would then be pressed upon the Government. However, in addition to holding conferences, and later publishing a journal,(178) several Committees were established which performed limited advisory and co-ordinating functions. The first of these Committees was established at the General Committee Meeting of August 1942, after a request from the Allied Post-War Requirements Bureau was considered.(179) It was suggested that the Nutrition Society might prepare a

report on problems concerning the post-war nutritional relief of Europe and a Sub-Committee was appointed to undertake this task.(180) But the organisation most celebrated by the Nutrition Society as its contribution to the war effort was the "Bureau of Nutrition Surveys". The foundation of the Bureau will be related in the following section.

4.5. THE WARTIME CO-ORDINATING AND ADVISORY FUNCTIONS OF THE NUTRITION SOCIETY

Shortly after the discussion of the pleas of Magee and Pirie and their respective allies in the Nutrition Society, in August 1942 an article written anonymously by John Yudkin,(181) a researcher at the Dunn Nutrition Laboratory, appeared in The Times which advocated the formation of a "Nutrition Council". This generated a series of contributions to the letters page over the following weeks. Yudkin's article argued that recently methods had been elaborated for the "detection of very early signs of nutritional deficiency". As examples he mentioned "measuring disability to see in the dark" for diagnosis of vitamin A deficiency, "microscopic examination of the eye" for vitamins A and B2 deficiencies, and "blood and urine analyses" for deficiencies of vitamins B1, C and the anti-pellagra vitamin. Yudkin claimed that tests such as these, made it possible to

...diagnose deficiency which may not lead to any obvious symptoms but impairs efficiency and lowers resistance... [and to] advise the authorities... on the relative merits of food policies... [and] ...by repeated re-examination... [to] ...detect the smallest

change in nutritional status long before a possible deterioration causes a widespread increase in ill-health and disease.(182)

Yudkin's argument concerning the potential of new laboratory tests mirrored that made by Harris and others, including himself, at the first Nutrition Society Conference in October 1941.(183) At that time there had been great enthusiasm for the use of examinations of the eye with the "slit-lamp microscope" as a means of diagnosing early vitamin B2 deficiency.(184) Yudkin was one of the few medically qualified workers at the Dunn, and he was therefore particularly involved in this work.(185) But in The Times he complained:

...there has been and still is no systematic survey of selected groups at regular intervals... Several small investigations under way at the moment are barely co-ordinated. In most cases only one or two of the known tests are being applied...(186)

He suggested that the main reason for "lack of a uniform plan" was the large number of organisations, of which he listed ten, which were concerned in some way or other with nutrition.(187) He then asserted:

What is needed is a Nutrition Council, composed of clinicians, laboratory workers, and Medical Officers of Health. It would be in constant touch with economists, agriculturalists, school authorities, factory workers, and canteen organizers. It would draw up a plan for periodical nutrition surveys of representative groups... It would work in close collaboration with the Ministry of Food so that food policy could be co-ordinated with nutritional policy...(188)

During the exchange of letters which followed these proposals, one correspondent pointed out that, the "broad basis of the problems dealt with in these letters has in

fact already been discussed and the needs for such Councils already agreed by the Mixed Committee of the League of Nations on Nutrition" (189), and asked, "Is it not now a case for action rather than reiteration?".(190) Another correspondent, Hans Krebs,(191) claimed that

...the "Nutrition Council" advocated... has already been in existence for over two years: the Food Policy Committee of the War Cabinet(192)... has essentially the objects... which your correspondent suggests for the "Nutrition Council".(193)

But despite these interventions, during the five weeks following the publication of Yudkin's article, The Times published 27 letters in which the appropriate remit and means of organisation of a Nutrition Council was debated.(194) One feature of the debate was a conflict between Lord Dawson,(195) former President of the Royal College of Physicians, who proposed that the Nutrition Council should be a committee of the MRC, and Lord Horder,(196) personal medical consultant to the Minister of Food, who argued that it should be a committee of the Privy Council.(197) Horder was supported by Sir Charles Wilson, (later Lord Moran),(198) and Bacharach, Treasurer of the Nutrition Society. According to Bacharach, the MRC was an unsuitable body for taking on the work of a Nutrition Council, because:

Much nutritional investigation calls for no medical training; indeed it would grossly waste medical skill to use it where chemists, biologists, economists, statisticians or other professional scientists could do the job better. For this reason... the collation and spreading of existing knowledge, the co-ordination of current investigation, and the planning of future research - the three main tasks of any nutrition

council - could not best be directed by an entirely medical body.(199)

As Bacharach saw it, the business of a Nutrition Council was not a matter for

...any one profession or for scientists of any one discipline but for all those who can contribute. May we not appeal for a sinking of sectional and departmental interests and a genuine co-operative effort in the national interest?(200)

Soon after the debate in The Times Harris was called to a meeting called by the Chief Medical Officer of the Ministry of Health, Sir Wilson Jameson.(201) Harris reported to a Nutrition Society Committee Meeting in December 1942 that Jameson had

...asked whether the Nutrition Society would collaborate in a scheme for co-ordination and exchange of views and information about current work on nutritional surveys and allied topics.(202)

The Committee decided

...to give its whole-hearted approval to any scheme for furthering nutrition research, and its organisation, and to offer services in any way which might be considered useful...(203)

Harris was authorized to attend further meetings to consider the matter. In mid-January 1943 Jameson wrote to Harris:

I've been thinking of the discussion... when persons interested in nutritional surveys met and conclude that the Nutrition Society is the best body to co-ordinate surveys.(204)

In response to this, in early February 1943, the Nutrition Society Committee established a "Standing Committee for the co-ordination of Nutrition Surveys", which would be a Sub-Committee of the English Group, to advise on whether

Jameson's invitation should be accepted, and to discuss practical details.(205)

Mellanby was not at all happy about this development. In early February 1943, Harris wrote to Mellanby about the matter, enclosing a copy of Jameson's letter.(206) Mellanby replied some three weeks later:

There is... no reason why the Nutrition Society should not act as a co-ordinator... [but] you have to consider your own position as a member of the staff of the Medical Research Council.(207)

Mellanby's reaction was coloured by a recent failure to retain a controlling interest in the work of the Oxford Nutrition Survey. The Oxford Nutrition Survey was established against Mellanby's wishes with the support of Jameson, with most of its funding from the Rockefeller Foundation, and with H.M.Sinclair as Director. It appears that Mellanby's objections to the the Survey were similar to his objections to the Informal Conferences of Nutrition Workers. Both organisations threatened the prerogative that he claimed for himself and the MRC in advising the Government on nutritional matters.(208) Mellanby explained to Harris that Sinclair's insistence on his independence "seems to exclude direct help from the staff of the Medical Research Council" in co-ordinating the work of the Oxford Nutrition Survey. He continued:

You realize that the Council have always strongly supported the view that their research staff should play an active part in scientific societies, and, in many cases, they have provided secretarial and editorial staff... On the other hand it seems to me that, if the Nutrition Society are going to co-ordinate and analyse the results of all nutrition surveys in this country, they are undertaking a type of work which is

outside the scope of ordinary scientific societies.(209)

When the Surveys Committee met in early March, after discussion, two possible schemes were put forward: Under "Scheme A", a director would be appointed "who could gain the confidence of nutrition workers... who would carry out investigations himself and eventually have a large staff including a statistician"; or, alternatively, "Scheme B" under which the Society would accept an offer for a part-time member of the staff of the Ministry of Health to serve the committee by convening its meetings, dealing with its records, and collecting and correlating reports of surveys. It was decided to recommend the immediate operation of the second option, but that the first option, to meet the needs of both peace and war, should be implemented as soon as possible.(210) The subsequent Nutrition Society Committee meeting, which took place later in March 1943, accepted these recommendations, and recommended Marrack(211) as the part-time director. The Committee agreed that "Scheme B" should be developed into "Scheme A", and asked Harris to write to Jameson to this effect. The "Standing Committee on the Co-ordination of Nutritional Surveys" was re-named the "Advisory Committee on Nutritional Surveys" the function of which would be to help Marrack with his work.(212) Marrack was asked to approach various government departments to ask them to send representatives to the committee, and to set to work to implement "Scheme B".(213) The main work of ^{the} Bureau and the Advisory Committee became that of organising activities and

producing reports which sought to improve communications between research groups, and to standardise methods of survey.(214) For example Marrack was able to claim later that the Bureau had standardised the method of measurement of blood haemoglobin content, so that results of different surveys could now be compared.(215)

Soon after the "Bureau of Nutrition Surveys" was established, and while the debate about the desirability of forming a Technical Section was proceeding, there was also a new phase of activity by those who wanted the Nutrition Society to be more involved in public policy making. Despite the effective shelving of Pirie et al's proposals for the conduct of conferences in 1942,(216) and despite the implementation of the more limited scheme for the Co-ordination of Nutrition Surveys, interest in the idea of a Nutrition Society taking on much wider-ranging functions was still very much alive. This interest was given added impetus in the summer of 1943, by the proceedings of the international conference on nutrition, which was convened by President Roosevelt and was held in Hot Springs, USA. The resolution adopted by this conference supposed that each government, in order to adopt a "sound food and nutrition policy" required "...the guidance of a central authority with special competence and responsibility to interpret the science of nutrition in the light of national conditions..."(217) It was recommended that each government create a "National Nutrition Organisation" with the responsibility for

...ascertaining food-consumption habits and the nutritional status of the population: such organisations to be composed of authorities in health, nutrition, economics and agriculture, together with administrators and consumers representatives etc...(218)

These organisations, it was suggested, would be provided with funds and facilities, and would "have the authority to bring their recommendations to the attention of the public and those agencies of government which deal with agriculture and the framing of economic and social policy."(219)

The English Group of the Nutrition Society had, at their July 1943 meeting,(220) appointed a Sub-Committee to consider funding of the Bureau of Nutrition surveys, and when the Sub-Committee met it was decided to recommend that "...since the work of the Bureau of Nutrition Surveys seems likely to be intimately bound up with the possible function of a National Nutrition Organisation..." that the Society should form a special sub-committee to examine the position.(221) The English Group Committee agreed to this suggestion and a sub-committee was appointed consisting of Le Gros Clark, Marrack, Barcroft, Bacharach and Harris which was asked to draw up a plan on the co-ordination of nutritional surveys, education, publications and finance, bearing in mind the Hot Springs resolution.(222) Unfortunately most of the papers directly related to the activities of this sub-committee, which became known as the "Special Committee on Education"(223) are absent from the Nutrition Society archives.

Le Gros Clark, who had only recently become a member

of the Committee, had already produced a memorandum on possible future functions of a "Nutrition Council", which is, unfortunately, also absent from the archives;(224) but an insight into his aspirations for the future of the Nutrition Society may be obtained from an article in the August 1943 issue of the Childrens' Nutrition Council Bulletin, of which he was editor. This issue reviewed the "progress and prospects" of the "nutrition movements" in the USA, Canada, and Britain, and in reference to the situation in Britain stated:

For a nutrition movement proper we are still waiting. In 1941 the Nutrition Society as a scientific body was initiated. It... has shown itself an effective meeting place for scientists working in all spheres of research and of applied nutrition. How the functions of this Nutrition Society will develop it is not easy at present to predict. But it has recently set up an advisory committee on the co-ordination of nutrition research, which has its relations with the Ministries of Health and Food... We incline to think that the Nutrition Society may become gradually an important body for the co-ordination of a nutrition movement in Britain... It is possible that the Nutrition society with its co-ordinating function in the field of nutrition research and with its high scientific repute, will gradually become a connecting link between the Ministries, where public policy has to be evolved, and the broad popular movement of which the CNC forms a part...(225)

Le Gros Clark presented a memorandum on the possible functions of a National Nutrition Organisation to the November 1943 Committee Meeting of the English Group of the Nutrition Society. Significantly, as if to counter those who were advocating a move away from practical concerns, and who favoured the formation of the "Technical Section", he presented the activity of the Organisation in improving

the diet of the population as a scientific problem rather than a political project or propaganda exercise. He stressed that the Organisation would need to include a section which carried out activities similar to those of the USA Committee on Food Habits which had been established in 1940 to

...discover the most effective means to bring the American people, with their varied nationalities, customs, traditions and economic conditions, both to know what is good nutrition and to desire it.(226)

These ideas about the need for research into the causes of food habits were most fully developed in an article in the CNC Bulletin of February/March 1945 which advocated the development of a new "field of science" called "social nutrition" or "food sociology".(227)

The November 1943 English Group Committee Meeting asked the Special Committee to continue its work, and it went on to organise a representative conference of all bodies engaged in education in nutrition in March 1944,(228) and a conference on the training and qualifications of managers and supervisors in industrial and hospital catering in July 1944.(229) A further sub-committee to consider the training of managers and dieticians, known as the "Planning Committee" was established, which considered a request from the Royal Sanitary Institute (RSI) for co-operation in the founding of a Diploma in Nutrition.(230) The Planning Committee also presented a memorandum on "The Training and Qualifications of Dieticians" to the members of the English Group

Committee at the end of July 1945, in preparation for a conference on the subject which was held in London in November 1945.(231)

There was never any National Nutrition Organisation established in Britain which performed the functions outlined in the Hot Springs resolution, and the Nutrition Society, through the Special Committee and Planning Committee, only fulfilled the hopes of the CNC to a limited extent.

4.6. THE WARTIME NUTRITION SOCIETY - SUMMARY

In the new circumstances of the war, there appeared, at first, to be a new unity among members of the ACN. However Mellanby found in the wartime situation opportunities to further his long-standing ambition to become Government Nutrition Advisor, and once he had in some measure gained this position, he jealously protected it from rivals.(232) Orr continued his campaign for food and agricultural policies based on nutritional needs, in much the same way as he had done before the war. He used what "inside" channels he could, and also maintained links with "outsider" campaigning groups.

The foundation of the Nutrition Society came about when Mellanby attempted to disrupt the "Informal Conferences of Nutrition Workers" through which a group of junior research workers were organising themselves independently to apply their research to the war effort and to advise the Government. But Orr saw in this development the possibility of creating a new organisation which could

advance his own cause - particularly by creating new links between agricultural and other nutrition workers. The Nutrition Society however, once it was formed, became an uneasy alliance of those who wanted to move away from practical concerns and in the direction of a conventional scientific society, and a radical faction which wanted the Society to continue the work of the Informal Conferences. But while the Society's conferences were, throughout the war, concerned mostly with practical matters, they never aimed to formulate recommendations to be submitted to the Government. Nevertheless by means of sub-committees and the "Bureau of Nutrition Surveys" the Nutrition Society did take on limited co-ordinating and advisory functions.

CHAPTER FIVE: POST-WAR NUTRITION

5.1. INTRODUCTION

I will begin this Chapter by considering the general post-war institutional position of nutrition research. I will show that some participants in the field felt that after the war there was a general lack of support for nutrition research because the universities and the MRC viewed nutrition as a rather politically-contaminated and applied field. I will then go on to consider certain developments in the post-war Nutrition Society in which we can see some members anxiously striving for scientific respectability. After the war the Society soon began publishing original articles and holding meetings for short communications and at the same time the co-ordinating, advisory and educational functions of the Society were discontinued. Conferences on particular themes were still held, but many of these - especially those held in the South - became much more technical. I will show however, that not all members were satisfied with the new style of the Nutrition Society. During the late 1940s and early 1950s there emerged differences between the Scottish Group and leading members in the South over the direction in which the Society was developing. There was also a similar dichotomy between laboratory scientists and some Medical Officers in the South.

Two episodes which occurred during 1953 which were debated by post by members of the Council of the Nutrition Society will then be related. One of the episodes -

concerning the alleged "infiltration" of the Society by the left-wing "World Federation of Scientific Workers" illustrates the strength, during the early 1950s, of the current which was anxious to keep the affairs of the society unconnected with radical politics. The other episode - concerning whether or not the Society should prepare a report on food additives for the House of Lords - shows however, that there were still some members who welcomed the possibility of the Society taking part in public policy making. But marked enthusiasm for this possibility was confined to the more junior members of the Scottish Group and, significantly, debate on this matter subsided as soon as it became known that the proposed activity of the Society would not be approved of by the MRC.

The last-mentioned episodes are not, in themselves, of major importance in the development of the Nutrition Society, although they were probably formative experiences for their more junior participants. The value of relating these episodes is that they illustrate the situation in which John Yudkin was formulating "Nutrition" as a university science, for it was in 1953 that the first students entered the BSc Nutrition Course at Queen Elizabeth College. In the final part of this Chapter I will consider the development of "nutrition" as advocated and practiced by Yudkin. The information presented in this and previous Chapters will be drawn upon in Chapter Six where I suggest an explanation of Yudkin's formulation.

5.2. THE POST-WAR INSTITUTIONAL POSITION OF NUTRITION RESEARCH

Following the war, after a period during which rationing became even more severe, the wartime machinery for rationing food, controlling food prices, carrying out food education and formulating food and nutrition policy, was largely, but gradually, dismantled.(01) The Scientific Food Policy Committee was formally disbanded in 1947, but the MRC's Special Diets Advisory Committee continued until rationing ceased.(02)

There was some controversy about the health effects of the rations of 1946 - 8, which resulted in the BMA establishing a new Nutrition Committee,(03) but it was generally agreed by scientists and politicians that the Government's efforts to feed the people in wartime had been highly successful,(04) and that it had been possible because nutrition was now well understood scientifically. As the research institutes and universities returned to their peacetime activities, this apparent success worked against institutional gains for nutrition research. The post war funding policy of the MRC was discussed by Sir Harold Himsworth,(05) Mellanby's successor, in the first MRC Annual Report produced under his secretaryship. During the war, he explained, the Council

...had found repeatedly that, when fundamental knowledge was already substantial, investigations of practical problems generally led to satisfactory solutions of immediate value; but when such knowledge was inadequate the additional knowledge, gained under the promptings of an emergency, did not usually remedy the deficiency, although information leading to practical help of a limited kind was often obtained.(06)

As the Government's food policy was thought to have been highly successful, nutrition was viewed as a field in which "fundamental knowledge was already substantial". When Chick had retired at the Lister Institute(07) and Macrea(08) had left to work at Glaxo and the Nutrition Department was to be closed down, the Director told one of the remaining nutrition workers, who I interviewed in 1979, "there's no future in nutrition".(09) According to another interviewee who had worked for the Oxford Nutrition Survey, when the Survey was started, Oxford University promised that it would become a permanent department of nutrition after the war. However, when the war was over, although the money was available, the promise was withdrawn because the University's scientific advisory committee thought that "...in ten year's time there would be no nutritional problems to study...", and that the new department "would be a white elephant." The department suffered ten years of a nomadic existence around Oxford laboratories, which included a period in Nissen huts at the Churchill Hospital.(10)

But these apparent set-backs for the institutional development of nutrition research certainly did not result just from a feeling that nutrition was almost "worked out". In addition, it would appear that the research councils were anxious to avoid the possibility of nutrition again causing the kind of political stir that had occurred in the 1930s. Thus, when Orr retired from the Rowett Research Institute, the opportunity was taken to limit its

activities with a ruling that the research conducted there was not to be concerned with human nutrition. One senior member of the Institute, who had joined the staff after Orr retired, told me that when he was appointed it was "...made fairly plain... that I was there to encourage the study of the nutrition of animals of agricultural importance". Another interviewee who had joined the staff of the Rowett after the war told me that when he accepted the post the new director planned

...to use the applied nutrition division as a bridge between human and animal nutrition - and although I did start a purely animal project - the idea was to develop it into human nutrition - but when it came to the question of money the ARC [Agricultural Research Council] just refused to pay - I might have been able to get some facilities if we'd been able to persuade the MRC or some other body to provide money and that was going to be a very uphill struggle... I seemed to be up against a complete scientific political blank wall...

These events at the Rowett were well known among members of the Nutrition Society that I interviewed. For example one interviewee who worked all his life in England, told me

...the Rowett is financed by the ARC... and when Sir David Cuthbertson(11) succeeded John Orr he was told that he was not to do work on human nutrition - that Orr did wrong to do this...

He added, as another example of the attitude to nutrition which he was illustrating, that

...in Glasgow... when Cathcart retired and Garry was appointed, [in 1947] Garry was told that he must not work on human nutrition - that human nutrition is not a university subject, you see its applied - nutrition is not a pure science, highly respectable, human nutrition is just applied...

This distaste for nutrition as an applied or

politically contaminated field was mentioned by several interviewees as typical of Mellanby. One interviewee spoke of nutrition as an aspect of social medicine and told me that the Social Medicine Unit in London(12) which was established just after the war, was formed

...more or less in the teeth of opposition from Mellanby - who had no patience with this kind of "fly-by-night"... politically tinged medical science - he would rather get down to the basics... he was... a Mill Hill(13) rather than a social medicine man...

This attitude is confirmed by archival evidence. When Mellanby was asked by the Nutrition Society in March 1946 to support a suggestion to hold a post war conference of European nutrition workers (14) he was rather dismissive of the idea. He told Peters:

I am not happy about this business because, so far as I remember the Nutrition Society are mainly concerned with the political, social and economic aspects of nutrition and they have never been distinguished for any great desire to hear and discuss new truths and new discoveries.(15)

Mellanby thought that if the invited delegates were to be concerned with "actual research" then they would be "occupied with members of the Accessory Food Factors Committee", and so he asked Peters to bring the matter up at the next AFFC meeting.

Sir Harold Himsworth also appears to have taken an attitude towards nutrition which implied that it wasn't a very respectable field to be involved in. One interviewee told me that there was a

...sort of general feeling - I don't think it was ever formulated - but when I talked to Himsworth about this - sure he would accept that nutrition was very important - but he didn't like the label

["nutrition"] much - so I never use the label...

It was not just the events of the 1930s which had made nutrition a "politically tinged" field, for in the immediate post-war years nutrition was still a hot political issue.(16) There was, for example, the public controversy about the health effects of rationing,(17) which prompted the BMA to establish its committee to "consider and report on the problems of nutrition in this country, including present nutritional standards".(18) Representatives of the MRC were noticably absent from its membership.(19)

The remarks which have been made in the last few paragraphs should not be taken to mean that the MRC cut its funding to nutrition, for biochemical research continued at the Dunn Nutritional laboratory,(20) and one aspect of nutrition which was certainly expanding during the late 1940s and 1950s was research into the nutritional problems of the colonies.(21) Mellanby, early in the war had brought Platt back from overseas to be his assistant with regard to nutrition.(22) In 1944 the MRC established a "Unit for Research in Human Nutrition" with "the primary object of assisting a resumption of co-ordinated field studies of nutritional problems in the Colonies."(23) Platt was made director of this Unit and was also appointed Professor of Nutrition at the London School of Hygiene and Tropical Medicine, where he taught nutrition as part of the diplomas in Public Health and Tropical Medicine.(24) During the post-war years the main nutritional problem in the

under-developed countries was thought to be protein deficiency and this became a rapidly expanding area of research.(25) A great deal of the activity of the newly formed Food and Agricultural Organisation of the United Nations became directed towards making good this deficiency.(26)

We will now move on from these considerations of the general post-war trends to see how the Nutrition Society developed in the new situation.

5.3. THE POST-WAR NUTRITION SOCIETY.

The demise of the Society's co-ordinating, advisory and educational activities

The co-ordinating, advisory and educational activities of the Nutrition Society were discontinued within about two years of the end of the war. Initially, this was mostly due to lack of external support for the Society in performing these functions, but there were also members of the Society who took the opportunity to withdraw from these activities as soon as the war was over. R.A.McCance, for example, resigned from the Advisory Committee on Nutrition Surveys in early October 1945. He told Marrack:

...I am not really in sympathy with the objects of the committee, for I rather disapprove of all this coordination, and I am not getting enough time to attend to my own work.(27)

These remarks rather upset Marrack, who in reply to McCance argued for the value of the work of the Bureau of Nutrition Surveys:

...I think you must agree that large scale haemoglobin estimations which were made before the war were practically wasted because nobody

knew what the figures meant; but if you insist on resigning I suppose that the committee has no choice but to accept...(28)

Marrack told McCance that he would ask Miss E.M. Widdowson,(29) McCance's colleague, to serve in his place, but Widdowson replied in similar terms:

Like Dr. McCance I am really against too much coordination, as I think that the disadvantages outweigh the advantages...(30)

McCance and Widdowson were expressing the mood of the movement against planning in science which was gaining support at that time.(31) But they appeared to represent only a minority view within the Nutrition Society, for the October 1945 meeting of the English Group considered that

...it was desirable that, after the war, the Society's activities with regard to nutrition surveys, nutritional education, etc. should be continued, as well as the holding of conferences and scientific meetings.(32)

Nevertheless, the Bureau of Nutrition Surveys was closed because the charitable trust which had been providing finance was unwilling to continue its grant after 1946,(33) and the Government failed to provide an alternative source of funding. Marrack prepared a memorandum which requested the Lord President of the Council and the Ministers of Health and Food(34) to receive a deputation from the Nutrition Society, but he was advised that representatives of the Society should first discuss the question with officials of the Ministry of Health.(35) When the Nutrition Society representatives met Sir Wilson Jameson, (the Chief Medical Officer) in November 1946, he assured them that he hoped that the Bureau of Nutrition Surveys would continue

in existence.(36) However, a letter from the Ministry in December, explaining that the Minister realized the importance of the work done by the Bureau, told Harris that the Ministry would be taking it over from January 1947.(37) The question of what further organisation would be required, such as an Advisory Committee, was said to be still under discussion but Marrack reported to the Nutrition Society Council in February 1947 that the Nutrition Society had not been asked to nominate representatives to advise,(38) and the Advisory Committee on Nutrition Surveys was therefore discharged. Without the active participation of scientists outside the Ministry, the work which the Bureau had started was effectively discontinued.

The "Planning Committee" remained in existence a little longer. At the June 1948 Council meeting it was reported that the Royal Sanitary Institute's scheme for issuing certificates in Nutrition and Catering was now in existence, and that examiners had been appointed. It was therefore decided that the Planning Committee could now be disbanded, and that the examiners would perform their functions as individuals rather than as representatives of the Society.(39)

The hopes of 1942-5 for the involvement of the Nutrition Society in the establishment of a "Nutrition Council", or a "National Nutrition Organisation", expressed through the plans for the development of the Bureau of Nutrition Surveys, had now faded. New opportunities which

arose for such developments were not pursued. For example, in October 1948 it was decided not to cooperate when the Central Council for Health Education(40) asked the Society to endorse a memorandum on "The Improvement of the National Diet".(41)

Organisation, meetings and publications

From the foundation of the Nutrition Society the development of the publishing activities was associated with discord between the Scottish and Southern members, and the changes which took place after the war eventually led to the same polarisation of opinion.

When the Society was set up it was envisaged that the Scottish Group would exist only for the duration of the war,(42) and also that a journal would not be established in wartime.(43) In early 1942, however, following an initiative of the President of the Royal College of Physicians,(44) a sub-committee set up to consider the possibility of founding a journal(45) recommended that a journal of conference proceedings should be started, but that the ultimate goal should be "the publication of a Journal of Nutrition including both communications read at meetings, and also original scientific papers submitted for publication."(46) After two years of negotiating details within the Society, and with the authorities, the first number of the Proceedings of the Nutrition Society eventually appeared in February 1944.(47) During the interim period there had been considerable difficulties between the English and Scottish Group Committees. The

Scottish Group had been alarmed by the unilateral actions of the General Committee in the initial moves to start publishing.(48) The dissatisfaction generated led to the formulation of a new constitution which was not finally fully adopted until May 1944. This contained a "Wartime Emergency Rule", which stated that "...no decisions affecting the permanent policy of the Society as a whole should be taken without the consent of all the local group committees".(49) A few months after the Proceedings was first published and the new constitution was in force, in July 1944 The Lancet wrote to Harris about the need for a "Quarterly Journal of Nutrition".(50) Subsequently the correspondence which resulted from this was circulated by the Council to the members of both Group Committees, with a request that they consider whether a new journal would be necessary after the war, and how such a journal could be financed. This rejuvenated the Scottish/English rivalry, for at the following Council meeting, in March 1945, it was pointedly reported by the Scottish representatives that at a Scottish Committee meeting Orr and Isabella Leitch(51) had stated that plans for the foundation of a new journal had been considered at the Rowett before the war.(52)

As soon as the war was over, the future organisation of the Society was under discussion. At the October 1945 English Group Committee meeting, it was decided to recommend to the Council, that in future the Society should be organised by a National Committee which would be elected by all members and which would arrange national

conferences; but, in addition, that local meetings could be organised by local committees which would be elected by members from those areas.(53) The Council decided to conduct a referendum on two possible schemes:

Under Constitution A, all members belong to a Region and all members take part in the election both of their Regional Committee and of the Council.

Under Constitution B members elect a Group Committee only if they wish. Members in other districts leave the business of that district (Meetings, Proceedings etc) in the hands of the Council.(54)

Constitution B was chosen,(55) and was brought into effect from May 1947. The English Group Committee was disbanded but the Scottish Group Committee continued. Now the Programmes and Publications Committee arranged the scientific meetings in the south and the Council met just once or twice a year.

The decisions to start holding "Open Scientific Meetings" where short preliminary communications regarding research in progress would be given, and to start accepting original articles for publication, were also taken soon after the end of the war. The communications would also be printed, in abstract form, in the journal, which was re-named the British Journal of Nutrition.(56) There was some anxiety that the change in policy would upset the Biochemical and Physiological Societies, but Harris was able to report to the December 1946 Council meeting that the Honorary Secretary of the Physiological Society had told him that his committee would have "no resentment at all"(57) at the Nutrition Society's decisions and that the

Honorary Secretary of the Biochemical Society had spoken in similar terms.(58) The first "Open Scientific Meeting" was held in February 1947.

All these changes, as far as one can tell from the records available, took place relatively unproblematically.(59) But it was not only the introduction of "Open Scientific Meetings" and the publication of original articles which signalled a move towards the style of a more conventional scientific society. In addition the Conferences organised by the Programme and Publications Committee became much more esoteric,(60) although the Scottish Group continued to hold conferences which were more general in their appeal. In the later 1940s the Glasgow and West of Scotland College of Domestic Science was a regular venue for Scottish Group meetings. In 1947, for example, a Conference on "Education in Nutrition" included a paper by a domestic science schoolteacher which criticised the facilities in schools for domestic science teaching,(61) and a year later a meeting on "School Meals" was held at the College.(62) A meeting on "Meat" in October 1949, chaired by the Principal of the College, included a paper on "Effects of Cooking Meat" by one of the lecturers.(63) While the Scottish Group meeting on "Fats as Foods" in April 1948 included a paper by lecturers from the Edinburgh Domestic Science College,(64) all the papers at a meeting on "Triglycerides in Human Nutrition" in Birmingham in October 1949 were highly technical.(65) The Scottish Group also made an effort to organise meetings for

agricultural scientists with "Nutrition of Poultry" in April 1949,(66) and dieticians with "Therapeutic Dietetics" in February 1950.(67) In contrast, typical of the conferences in the South were the highly technical discussions about the assessment of nutritional status in March 1948,(68) and "Nutrition and Fertility" in March 1949.(69) Particularly inaccessible were meetings on "Antivitamins" in October 1948,(70) and Vitamin A in September 1950.(71) The only meetings held south of the border which competed with those in Scotland in terms of popular appeal, were "Commonwealth Contributions to the British Diet"(72) and "Nutrition of Athletes", (73) which was timed to coincide with the 1948 Olympic Games. But even this meeting included an esoteric paper on "Chemical aspects of Muscular Contraction." (74) The only Scottish meeting to rival the inaccessibility of those in the South was on "The Relation of Diet to Disease" in October 1948.(75)

To make space in the Journal for the original articles and the Abstracts of Communications, it was decided at an English Group Committee meeting in September 1946 that the amount of space devoted to each Conference would have to be reduced.(76) However, the original articles came in slowly at first, and for a time more space was allowed to the conferences than had been intended.(77) In 1950, however, the supply improved and in May Kon had to write to E.C.Owen,(78) the Scottish Secretary, asking him to reduce the size of the conference reports.(79) It was this which

led to the renewed Scottish/English conflict. At an Editorial Board Meeting in September, during a discussion about the relative importance of the Conference Proceedings and the original articles, the Scottish members - Professors Garry,(80) and J.N.Davidson(81) and Dr.Meiklejohn(82) - thought that the Proceedings should be given priority, but the other members disagreed.(83) At the Scottish Group Committee Meeting of October 1950, several members complained about the recent editorial requests for brevity, and a motion was passed to say that the Scottish Group would "...welcome any arrangement by which Conferences could be reported in full, if necessary by means of a separate journal..."(84)

Following a discussion on the publications at the 1951 AGM, Kon and Bacharach produced a memorandum on the future of the Journal which was circulated to members of the Editorial Board and Council. It proposed that the original articles be published as the British Journal of Nutrition and that the proceedings of conferences and open scientific meetings, be published separately. Members would be allowed to take either journal for their membership fee, or both for an additional fee.(85) This drew some comments from Garry which suggest that underlying the difference of opinion were different conceptions of what "nutrition" as a scientific enterprise was. Garry told Bacharach:

...I have no antagonism... to the publication of original articles with a bearing on nutrition, but I cannot help feeling that such a publication takes second place to our conference reports... The Nutrition Society is not just another scientific society serving the interests of

relatively few scientists. It is a a meeting place of scientists and sciences. The deliberations of the members of the Society have importance for scientists following narrower disciplines and repercussions affecting every living human being and other animals from farm animals to domestic pets and laboratory animals.

For every member actively engaged in direct research into nutrition one should expect 100 members taking an intelligent interest in the subject. In other words, we ought, if we do our duty to the community, to have a very large membership with only a nucleus of active research workers in nutrition proper. We should have a membership of 20,000 or more.

If this proposition be true then the important publication of our Society is the volume giving Reports of our Conferences. These ought to appeal to scientists working in cognate sciences, and all those who, in their daily lives, have to take cognisance of the bearing of nutrition on their work. Think for example of medical men, of veterinarians, of teachers of domestic science in colleges and schools, and of many others.(86)

Garry suggested that the proceedings should be provided to members for the membership fee, but the original articles only for a "considerably enhanced" payment. Bacharach was skeptical:

Although you say you are proposing something revolutionary, and I think I know that Kon will fight in the last ditch against the view that the conference Journal should take precedence over the other, to my practical mind your proposals will work out almost exactly as ours.(87)

He suggested that if members could choose whether to take one or both journals, most would subscribe to the proceedings only, but "those who are interested enough to take the original work will certainly also want the conference reports." Bacharach thought that where he and Garry differed was

...in assessing the potential membership among people who only want the Conference reports. Frankly, particularly as some of these have been

highly technical, I think you grossly over-estimate the potentialities. I should be very surprized indeed if more than 1500 people were ever prepared to pay 30/- a year for these reports, and gratified if we reached 1000...(88)

A second memorandum was produced, incorporating Garry's suggestion that the subscription to the proceedings be compulsory for members and that the original articles be optional, but this did not however settle the conflict.(89) In September 1951, at the time of a Nutrition Society Conference in Aberdeen,(90) there were also meetings of the Scottish Committee, the Editorial Board, and the Council. The Scottish Committee meeting was attended by Cowell, Kon and Bacharach and the Society's publications were the main item for discussion. Dr J.Stewart(91) suggested a plebiscite be held regarding the "relative importance of scientific papers as against conference proceedings", but this was opposed by Bacharach. Professor J.N.Davidson, Editor of the Scottish proceedings told the meeting that Garry, who, he said had "...always maintained that the Conference proceedings should be the chief consideration", favoured a plebiscite. Kon and Bacharach said that this was not the view of the Editorial Board and pointed out that

...the Scottish membership was somewhat different from the English in containing many more workers in dietetics and Domestic Science than in England.(92)

To this Owen suggested that there must be "...a source of members still untapped in England." When Miss Murial Watt, the Chairman of the meeting and Senior Inspector of School Meals of the Scottish Education Department, "...tested the feeling of the Committee about the relative importance of

the conference proceedings as against original papers", with "a few dissentients", it was agreed that proceedings were the most important.

A discussion ranging over "every aspect of the Society's publishing activities" took place at the Editorial Board meeting, following which Bacharach and Kon produced a memorandum which suggested that the Society continue to publish the Journal through Cambridge University Press, but to publish the Proceedings elsewhere. They suggested that subscription to both publications should be compulsory to non-members, because if the proceedings were available separately this could

...lead to a wide sale of the Proceedings with some reduction in sales of the journal, involving us in a net gain of money but perhaps some loss in status.(93)

Kon and Bacharach, it appears, had become leading exponents of the ideology of pure science within the Nutrition Society, although they had not always been identified with this tendency. Kon, it will be re-called, was founder and Secretary of the Informal Conferences of Nutrition Workers, the main concern of which had been the application of research, and which had challenged the authority of the MRC.(94) Bacharach was well-known to have been a leading activist of the Association of Scientific Workers, and communist sympathiser. When the Society was founded Bacharach had been in favour of a wide definition of conditions for membership.(95) Due to their previous activities Kon and Bacharach were implicated as associates of the more radical wing of the Nutrition Society.

Immediately following the war they had also expressed a distinctly radical line at the conference on "The Training and Qualifications of Dieticians"(96) But by 1951, as we have seen, Kon and Bacharach were using their influence over the Society's publishing activities in order to further their quest for scientific respectability.(97)

Professor Garry was Cathcart's successor at Glasgow and clearly there were differences between their attitudes towards nutrition and the Nutrition Society. Cathcart failed to sign Orr's circular letter which proposed the formation of the Society, and he never became a member. Garry, in contrast, organised the Scottish Group and became President of the Society in 1953.(98) These differences in attitude are probably explicable in terms of their contrasting relationships with Orr. While, during the 1930s, the views of Orr and Cathcart represented diametrically opposed positions in the debate about malnutrition and poverty, Garry had worked with Orr at the Rowett, and there is no evidence of any difficulties between them. But Garry, like Cathcart, was interested in energy metabolism,(99) and was unwilling to admit to "nutrition" being a separate area of study,(100) regarding himself as a physiologist with an interest in nutrition. It is in this light, that we can understand Garry's formulation of nutrition as a "meeting place of scientists and sciences".(101) Garry also continued the links between the Physiology Department and the Glasgow and West of Scotland College of Domestic Science which had been

established by Cathcart.(102)

The dichotomy between the views of the Scottish Group and Kon and Bacharach was not the only polarity which was revealed by these debates about the Society's publishing policies. Not only did Bacharach's first memorandum produce the critical response from Garry, but his second memorandum also produced a critical response from Magee. In many ways, Magee's comments were similar to Garry's, but the former's complaints centred on what he regarded as the over-esoteric nature of the original articles, rather than the relative importance of the original articles and the Proceedings. Magee claimed that there had been a long-standing dissatisfaction with the Journal:

During the past year or so the BJN has come in for much comment among my colleagues and friends. It is considered to be, and I must confess with justification, a sort of overflow for the Journal of Physiology and the Biochemical Journal. It has been represented to me - and I cannot disagree - that the BJN apes after the style and format of the above-mentioned journals, and in doing so is not fulfilling its proper function as the mouthpiece of a Society which includes medical practitioners, vets, dieticians, statisticians, farmers and others, as well as academic research workers. As it is at present conducted only the last-named can find an outlet for publication.(103)

Magee was aggrieved by a personal experience:

Some months ago I sent to the BJN a summary account of our experiences of the feeding of West Berlin by air during the blockade. The paper was as interesting, if not more so, from the human and the administrative angle as from the scientific point of view. It was returned with a request that I should eliminate the human and administrative parts and set out the rest in a nice orthodox fashion- introduction, subjects, methods, results, discussion and summary - just as if W.Berlin were populated by two and a half million rats instead of human beings.(104)

For Magee this illustrated the "pedantic policy of the editorial board", but he claimed that long before his own experience he was convinced that "...interest in the BJN is falling rapidly and will inevitably lead to a decline in membership..."(105) Predictably Bacharach defended the record of the Journal:

I absolutely deny that the Journal is biased on the academic side, at any rate in subject matter and origins of papers... You will find the Journal full of papers about the nutrition of calves, and the rumen of the sheep, with some applied human physiology (energy metabolism, under nutrition, Nitrogen balance) and a lot about chickens... we have insufficient papers on the sociological side of nutrition... [but at] the same time, I am not prepared to concede an inch in the direction of admitting anything other than the records of original work, and legitimate comments to it, to the columns of the Journal itself. The place for reviews and surveys [of knowledge] is clearly the Proceedings.(106)

Magee repeated himself in a later letter:

You deny that the journal is biased on the academic side and I re-assert that it is, not only because I say so, but because many other members say the same... A large proportion of the members work in applied nutrition and the Journal as it is at present run provides no outlet at all for the researches of the great majority of these. I have always maintained that the Journal should be confined to original work, but a laboratory is not the only place where this can be done, especially in the field of applied science...(107)

Magee, it will be recalled, during the war, was a leading exponent of the view that the Nutrition Society should steer clear of politics and should stick to the "facts of nutrition science".(108) As a Medical Officer in the Ministry of Health he had found himself in an uncomfortable situation when the Nutrition Society Conferences bordered on political matters. It now seems that he again found his

position marginalized when the emphasis of the Society turned away from administrative and clinical aspects of nutrition towards laboratory research.

I will now proceed to accounts of the two episodes which occurred in 1953 which further illuminate the situation in which Yudkin was formulating "nutrition" at Queen Elizabeth College.

The "agene fiasco" (109)

At the time that Mellanby made his dismissive remarks about the Nutrition Society being uninterested in scientific truths and only interested in social, political, and economic aspects of nutrition, (110) he was himself working on a topic which had obvious social, political, and economic implications. He had found that flour which had been treated with the "improving agent" Nitrogen Trichloride or "agene", was the cause of "running fits" in dogs. (111) It was not only others who took up the implications of this discovery, for over the remaining years of his life Mellanby also made a number of very general and speculative speeches about the repercussions of his work. (112) One symptom of the increasing public interest in the subject of the chemical treatment of food was a debate on the "Use of Processed Foods" in the House of Lords, in June 1953, during which agene was mentioned several times. Orr, who had been awarded a peerage in 1949, contributed to the debate, and The Times reported that he said that "the subject being debated was so important that it should be investigated and... that this might best be

done by the Nutrition Society, who were disinterested people and not in Government service..."(113) Geoffrey Bourne,(114) Secretary of the Nutrition Society at that time, after spotting this reference to the Society, wrote to Orr suggesting that they meet to discuss the matter, so that he could put Orr's views before the Council.(115) Following this meeting, Bourne prepared a memorandum on the subject which he sent to Council members. Bourne told the Council that Orr had said that the Lords would be

...very grateful for guidance from the Society...
[and that] ...he would be pleased to raise the question again should the Nutrition Society decide to take action...(116)

Orr also suggested that if the Society did decide to take action, then it was likely that the House of Lords would wish to consult them again in future on matters of national importance. Orr told Bourne that he had discussed the suggestion unofficially with Himsworth, and that Himsworth approved of the idea. Bourne advised the Council:

The Nutrition Society is of course primarily a scientific society. The action suggested does not come within its normal activities and members of Council will need to consider whether participation in this matter will be or will not be to its advantage.(117)

Bourne asked for comments by post.

Of the Scottish members of the Council, four out of five were in favour of taking up Orr's suggestion. Three were from Edinburgh - R.Passmore,(118) of the Physiology Department of the University, C.P.Stewart,(119) of the Department of Clinical Medicine of the Royal Infirmary, and Alex Robertson,(120) of the Veterinary School. Passmore

commented:

It has always seemed to me to be a proper function of a scientific society to provide an expert opinion on matters within its competence, when consulted. The Nutrition Society would seem to me fully competent to give an opinion on the matter...(121)

Stewart thought that, to take up the issue

...would undoubtedly be good for the Society's standing since the request for help is of the kind which has, in the past, frequently been made to the Royal Society.(122)

K. Blaxter(123) of the Hannah Dairy Research Institute near Ayr was also enthusiastic:

...I feel that the Nutrition Society could take a leading part in this matter, and I think that the report of an appointed sub-committee would be of considerable value...(124)

Professor Garry, however, opposed the idea of the Society forming a committee to report on agene in the following terms:

I must confess that I am not at all happy at the suggestion. It seems to me that we are being asked to pull chestnuts out of the fire. You know, I suppose, that the campaign against the use of agene comes largely from a political pressure group called the Housewives League... Within our Society... I expect there are those who abominate the use of agene and those who think it is most desirable... How are we going to cope with such a position?(125)

Garry suggested that the Society could hold a symposium on the subject instead of setting up a committee.

The English members of the Council were all either against Orr's suggestion or were lukewarm in their support for it. E.Washington, dietician in the Ministry of Health, thought that "the collection by the Society of factual information... and the presentation of a report to the

House of Lords... would be quite within the scope of the Society's aims and responsibilities...",(126) but suggested that since a sub-committee would require financing, and since it would not have access to much unpublished work, then a symposium would be a better option. J.L.Burn,(127) Medical Officer of Health for Salford thought "a team of workers under a leader of good standing"(128) would be more appropriate than the Nutrition Society, and suggested that the MRC should take up the question. H. Krebs,(129) Professor of Biochemistry at Sheffield thought that

...it would be a difficult job for a scientific society to conduct an investigation into a problem of applied science and to arrive at a clear cut opinion...(130)

Sinclair thought that the matter should be discussed at a meeting of Council, rather than by correspondence. He suggested that before anything could be done it was essential to clarify Himsworth's views, because he thought that the unofficial approval that Orr had spoken of probably meant "a chance remark in the lavatories at the Atheneum".(131) In addition he thought that the Ministry of Health would need to be consulted.

Sinclair's intuition appears, from subsequent events, to have been sound and his point had already occurred to Harris, who had recently been elected President of the Nutrition Society, and who was also conducting work on flour improvers. Harris, like Krebs, thought that Orr's suggestion was impractical, and he sent a copy of Bourne's circular to Himsworth. It soon emerged that there had been a misunderstanding between Orr and Himsworth, and that

Himsworth had taken it that Orr was suggesting a Nutrition Society Symposium on the subject. There was already a committee under the Chief Medical Officer of the Ministry of Health examining the question, and at their request the Food Adulterants Committee of the MRC were conducting certain investigations.(132) A letter from Harris to Bourne was then circulated to the Council which stated:

Himsworth authorizes me to say that had he understood Orr's proposal to be as outlined in... [Bourne's] memorandum... he would certainly have objected to it very strongly.(133)

Harris's memorandum was decisive, for there is no evidence of any further discussion of this matter as soon as Himsworth's true opinion became known. Orr had proposed in the House of Lords that the Nutrition Society, as an independent, non-governmental body would be well equipped to produce a report on agene. However, from the way in which the issue was rapidly dropped it would appear that the members of Council were not strongly interested in such a development, and that they were concerned not to be seen to be challenging the authority of the MRC.

"Infiltration" by the World Federation of Scientific Workers

In September 1953, a few months after the "agene fiasco", J.G.Crowther,(134) Secretary General of the World Federation of Scientific Workers,(135) contacted Bourne to enquire whether a questionnaire could be distributed at a scientific meeting of the Nutrition Society.(136) Bourne agreed to this request, and arranged for a note to be inserted into the programme for the following meeting.(137)

The Questionnaire concerned "The Economic and Working Conditions of Scientific Workers" and aimed:

...to ascertain exact data on the status of scientists, engineers and technicians in various countries throughout the world.(138)

The survey, it was hoped would

...assist scientists in many countries in their struggles for improvement of working and living conditions and for the utilisation of science for peaceful purposes.(139)

Following the meeting at which the questionnaire was made available, Bourne received a letter from McCance which strongly objected to it. McCance, it will be recalled, had resigned from the Surveys Committee after the war because he didn't believe in the co-ordination of science.(140) The "co-ordination" or planning of science which McCance objected to was closely identified with the 1930s and wartime "Social Relations of Science Movement", and Werskey indicates that the WFSW, founded in 1946, became one of several organisations through which the scientific left attempted to regroup and to reverse the setbacks of the cold war.(141) McCance told Bourne:

I am writing about the questionnaire which was circulated at the meeting of the Nutrition Society the other day. I do not know who was responsible for this, and I really prefer not to know as I regard it as a most unfortunate document. It stinks of communism; clever communism moreover. Every question is so worded that to answer it inevitably draws attention to matters which are likely to make the cooperator discontented. We have passed it around the laboratory here and one and all condemn it. I hope you feel as I do and that you will not let our society to be used for this sort of purpose.(142)

McCance asked Bourne to draw the attention of the Council

to the matter. In reply Bourne was polite and evasive:

It is most unfortunate if we have been used by a political party for propaganda purposes and I must take the responsibility for this in not having read more carefully the sample document sent to me... it seemed innocuous enough and I was under the impression that WASW [Bourne's mistake] was a reputable association...(143)

Bourne said that he was unable to say whether he agreed with McCance or not because he had thrown his copy of the questionnaire away, but agreed to send McCance's letter to Council members with an invitation to them to send in comments. Harris wrote independently to Bourne before receiving the circular. His comments were along similar lines to those of McCance. Harris was anxious to know who had authorized the circulation of the questionnaire, and explained that

...during the course of the meeting I overheard comments from people in the audience suggesting that the "so called World Federation of Scientific Workers was a communist-inspired organisation"(144)

Harris said that he had never heard of the organisation before, but considered that

...it would be wrong for the Nutrition Society to lay itself open to the charge of lending its name to the propaganda of any political or sectional interest, be it conservative, or socialist, or liberal, or communist, or vegetarian, or christian science, or anything else whatever.(145)

Harris was sure that

...our job as a scientific society is to encourage scientific knowledge as such - then people's individual political reactions to scientific facts is a separate issue which does not concern us as a scientific society.(146)

He told Bourne that he had written to the World Federation

of Scientific Workers to find out more about it and he had found that the names of the officers(147) "...do seem to lend colour to the allegation that it is rather a lop-sided organisation."(148) In his reply to Harris, Bourne admitted responsibility for the circulation of the questionnaire, and agreed that the Nutrition Society should not be used for any sort of propaganda "particularly by a political party". He continued:

I realized that some of the officers of the society were communist but I did not think the whole organisation was communist. I cannot see myself anything particularly wrong with the document but I feel now that I have committed an error of judgement in associating the Nutrition Society, however slightly with the World Association [Bourne's mistake] of Scientific Workers.(149)

Unfortunately the replies to Bourne's circular are not present in the archives, but a few days after his last letter to Harris, he drew up a summary of the replies of the members of Council as follows:

6 members of the Council thought the questionnaire innocuous or innocent or the whole matter trivial.

1 member was doubtful.

2 members did not give opinions on the questionnaire as such.

4 members agreed more or less unreservedly with Professor McCance.

Of the members who disagreed with Professor McCance's letter, 2 expressed themselves in strong terms. On the other hand 10 members thought it highly undesirable that the Society should be involved in any political matter.

1 member of Council did not reply...(150)

In a second letter to Bourne, Harris suggested that in future Bourne should consult the other officers of the society in a similar situation, and also that

The Council should consider whether it ought not

to place on record somewhere a sentence disassociating itself from the activities of the World Federation of Scientific Workers.(151)

But Bourne told Harris:"The Secretary needs to be allowed some freedom of action", and made it clear that he did not entirely agree with McCance's view:

Regarding the questionnaire, I, like some members of Council cannot agree that it stinks of communism; it asks no more than any Trade union circular and appears now, as it did to me before, an innocent document...(152)

However, he continued:

The really unfortunate thing is that it appears to have been sponsored by a communist organisation and I am extremely sorry that I let them make me, and through me the Nutrition Society, a dupe for their activities.(153)

Bourne agreed with Harris's suggestion that the Council might take action to disassociate the Society from the Federation, and suggested that they put an appropriate notice in the programme for the next meeting.

McCance's argument against "co-ordination", and his response to the WFSW questionnaire, are both expressions of opposition to the "Social Relations of Science Movement".(154) His position on "co-ordination" in 1946 represented very much a minority view in the leadership of the Nutrition Society,(155) but in 1953 four out of thirteen agreed unreservedly with his extreme comments about the questionnaire, and there was also an overwhelming majority in favour of the Society avoiding "any political matter". Earlier in the year, when an opportunity for involvement in formulating Government food policy appeared, it was definitely welcomed only by the younger and

professionally less well established Scottish members of the Council. In the controversy about the journals, those who had previously been implicated as associates of the radical camp, (Bacharach and Kon) were the most vigorous exponents of the ideology of pure science, and in the WFSW affair we find Harris, who was in a similar situation, (156) presenting a similar point of view.

Having given accounts of various episodes in the Nutrition Society which help to illuminate the state of the field during the period after the war, I will now move on to consider the development of Yudkin's approach to the subject.

5.4. JOHN YUDKIN AND THE FIRST DEGREE COURSE IN NUTRITION.

Introduction

The first degree course in nutrition in the U.K. began in 1953 at Kings College of Household and Social Science, which was renamed Queen Elizabeth College, (QEC) in the same year. This was where Mellanby had been first, and Mottram second, Professor of Physiology. As we have seen, Mellanby had used the position as a springboard to his career in medical research, and he never showed very much interest in domestic science. (157) Mottram, unlike Mellanby, was not medically qualified. He enthusiastically developed the teaching of physiology to the domestic science students, and it was also during his tenure of the Chair that the postgraduate course for dieticians was started. (158) Mottram retired in 1944, and was succeeded by John Yudkin who took up his post in January 1946. (159) As

soon as Yudkin arrived at the College, he started campaigning for the institution of a BSc in Nutrition. This was finally approved by the University in 1951, and the first students started the course in 1953. Yudkin was made Professor of Nutrition in 1954.(160)

Yudkin's early career

Yudkin, like Mellanby and Mottram, spent some of the early years of his scientific training close to Hopkins. After he gained a BSc degree in Chemistry and Biology at Chelsea College in 1929 at the age of 19 Yudkin went to Cambridge to read Biochemistry and graduated BA in the subject in 1931. He began to conduct research in Hopkins's laboratory and his earliest papers, on biochemical embryology were published jointly with Joseph Needham and others in 1932.(161) Soon Yudkin moved on to work on bacterial chemistry as a research student under Marjory Stephenson(162) and he also trained for a medical qualification at the London Hospital. Yudkin was awarded his PhD in 1935, and his MB ChB in 1938. His first paper on nutrition was published with Harris in 1936, and was a survey of the vitamin C reserves of hospital patients.(163) His second paper on nutrition, published in 1938, was a description of a case of beri beri in London.(164) In 1938 Yudkin joined the staff of the Dunn Nutritional Laboratory, and became one of the few medically qualified workers there.(165) At the Dunn he worked on alcohol tolerance,(166) the influence of various factors on vitamin B1 requirements of rats,(167) and the use of vitamin B1

content of urine as a means of assessing the "Level of Nutrition" of humans.(168) When the war started, the development of various other techniques for the assessment of nutritional status became his main concern. In 1942 he published a paper which discussed the use of the slit-lamp microscope for the examination of the eyes for the early signs of riboflavin deficiency,(169) and from 1943 a number of papers on the use of tests of night vision as a means of assessing vitamin A status.(170) It will be recalled that at the first Nutrition Society conference, the slit-lamp microscope technique was celebrated as an example of the new tests which would allow the nutrition of the population to be accurately monitored.(171) It will also be recalled that Yudkin based his call for a "Nutrition Council" in The Times in August 1943 on the potential of tests such as these.(172) But in Food Manufacture, in October 1943, Yudkin argued the case for a Nutrition Council, in terms which placed much less emphasis on the tests and much more emphasis on politics. He concluded this article as follows:

...if we really intend to achieve freedom from want, the first essential is to devise a food policy which provides for the nutritional needs of the people. To do this adequately requires the existence of a... Nutrition Council... in the hands of men of broad knowledge and wide interests, who would not despise the social implications of their work nor refuse to acknowledge them by labelling them "political". It would be in touch with economists and would aim to make contact, with all speed, with similar organisations in other lands, in order to hasten the day when malnutrition is as rare and as startling as the bubonic plague.(173)

Over the war years Yudkin conducted a number of surveys which aimed to assess state of nutrition using

clinical assessment, anthropometry, laboratory tests, and performance tests. The main study of this type was of over 1,000 Cambridge schoolchildren, conducted between 1941 and 1943; this provided material for an MD,(174) and data for papers published as late as 1952.(175) The study involved the measurement of the weight and height, which were used in the calculation of the "Tuxford Index"(176) of the children. Their eyes were examined with the slit-lamp microscope, the level of haemoglobin in their blood was measured, and strength of grip was assessed by means of a dynamometer.(177) Other features were noted, such as the presence of pallor, and the nutrition of the children was also assessed clinically. A trial of vitamin pills was carried out to see if they had any effect on all these measurements and observations, but they were found to be of little or no benefit.(178)

In Yudkin's work that was published during the war there were several echoes of Orr's Food, Health and Income. In the first report of the survey of Cambridge schoolchildren, he pointed out that the nutritional status of the children from the better-off parts of Cambridge was higher than those from poorer parts of the city,(179) and later, in a paper in The Lancet in 1944, he used the data for an analysis of the relationship between "Nutrition and Family Size".(180) Here Yudkin discussed the relationship of income per head to family size and social class, and pointed out that in the recent debate on family allowances in Parliament, the kinds of sums which were mentioned would

do little to promote equality.(181) He presented data which showed that nutritional status was lower in larger, and particularly in lower class, families, and argued that the differences in nutritional status were not genetic in origin. He concluded:

The social implication of these findings is clear. Except in the wealthier sections of the community adequate physical development of larger families cannot be achieved within present economic and social conditions. The decreasingly satisfactory economic environment to which later children are exposed can only be avoided by some form of family allowance.(182)

The development of Yudkin's definition of "nutrition", 1946 - 53.

When Yudkin started work at Kings College of Household and Social Science he was not funded by the MRC, and he had to rely on College funds and grants from the food industry.(183) There was no further work which drew attention to class differences and which criticized government policy along the lines of the 1944 article,(184) and the survey results were then applied to the problem of the relationship between clinical and other means of assessment of nutritional status. Yudkin advocated these "correlative studies" at the First International Congress in Biochemistry in 1947.(185) He argued a similar line at a Nutrition Society conference in 1948.(186) After discussing the possibility of basing nutritional assessment on anthropometric and performance tests (e.g. strength of grip tests), he concluded that these did not give sufficient information, and suggested that what was needed was

...an intensive study in a group of children, in

which data about the diets, results of clinical and biochemical examination and economical and social factors in the lives of children would be related to the anthropometric data... By such studies it might be possible to decide on a criterion of nutritional state and thus to see how anthropometric measurements are dependent on them.(187)

But the correlative studies were not a remarkable success, and produced some rather unexpected results.(188) The keynote became the difficulty of the assessment of nutritional status, and in a lecture in 1951, rather than attempting to assimilate the approaches of the "nutritionist" and the "clinician", Yudkin distinguished between them as follows:

The approach of the nutritionist is usually statistical; he is concerned in the assessment of nutritional state in groups or populations, comparing one group with another group or determining the proportions of each group which fall into various grades of nutrition. The clinician, on the other hand, is more often concerned with the individual, with the patient for whom diagnosis is sought, and where nutritional deficiency may play a part in the pathogenesis of the signs and symptoms which the patient presents...(189)

So the "assessment of nutritional status" for the non-medical nutritionists whom Yudkin was hoping to train, would be a matter of inferring nutritional status of groups from health and anthropometric statistics and dietary surveys. But besides the difficulties with anthropometric methods, laboratory and performance tests, Yudkin also began to emphasise the difficulties of accurately measuring nutrient intakes by dietary surveys, and the continuing unreliability of estimates of nutrient requirements. Under the heading "Nutritional Status", in a review article in

the 1952 edition of The British Encyclopedia of Medical Practice, he observed:

It is... becoming increasingly recognized that methods for assessing dietary intakes, for the determination of dietary requirements with which those intakes can be compared, and for the assessment of nutritional status by clinical and laboratory means, are all fraught with considerable difficulty.(190)

The emphasis became that of opposition to simplistic approaches to nutrition and the assertion of the complexity of the subject. This was the import of Yudkin's lecture on "Fighting Food Faddism"(191) and an article on "Vitamins in Practice" in Medical World in 1953. In this article he argued that while vitamin therapy "...has a part - an important part - to play in modern medicine... it is not unreasonable to suggest that it should be used with some discrimination." Unless this was done, he continued,

...we are likely to bring the whole of vitamin therapy into disrepute, to make it difficult to distinguish proper from improper indications for its use.(192)

"Nutrition" as formulated by Yudkin in 1953 was to be considered a "new entity." He explained in "Fighting Food Faddism":

Our first principle is that nutrition concerns every aspect of food, from its growth as plant or animal, through its harvesting, transportation, preparation and consumption, to the effect of that consumption on the health of the people. We must teach something of the soil and agricultural methods, we must teach something of breeding and selection, the effects of pests and parasites on harvested food, food preservation and cookery, and the economic, psychological and sociological aspects of food consumption. We must give instruction in the chemistry of food and the physiology of its use by the body, in the effects of deficiency and the methods of its treatment. We must do all this teaching of biology,

chemistry, physiology and a variety of other subjects, in such a way that our students do not think of themselves as specialists in any of these fields, but as persons who have built up the relevant parts of these subjects into a new entity, nutrition...(193)

Coupled with this definition of nutrition, was the idea that the "nutritionists" would apply their knowledge by involvement in and influence upon conventional education. There was an implication that in years to come nutritionists would also influence government policies, but it was not specified how this would be brought about. These ideas appeared in Yudkin's summing up address to the Nutrition Society's 1953 conference on "Education in Nutrition".(194) This conference was held at QEC and included papers on nutrition education in schools, for medical students, in the army, and in hotel and catering courses.(195) Yudkin reviewed some of the points which had been made by the other speakers and continued:

The difficulty... is that at present those who teach nutrition are themselves not sufficiently trained in the subject. There is thus, for example, a tendency for domestic science teachers to learn their nutrition from other domestic science teachers, so that there is inevitably a perpetuation of ill-founded, inaccurate and out-of-date information from generation to generation.

Similarly, medical students, if taught nutrition at all, will be taught by the few clinicians who have an interest in the subject but whose knowledge, to judge from letters in the medical journals, is not always necessarily sound. Again, as we have heard, students in technical schools can learn either from experts in the crafts of food preparation or food technology, who have little nutritional training, or from academically minded chemists or biologists, who may not have the ability to implant essential information at an appropriate non-academic level.

The obvious question arises, "Who is to teach

the teachers?" It seems clear that the need is for the training of nutritionists having, on the one hand, a sound academic background and, on the other, a full appreciation that nutrition is concerned with what people eat. As well as providing the source from which can be drawn the teachers in nutrition at all levels, the existence of trained nutritionists might well in time influence those with administrative responsibility to realize the significance of the science of nutrition...

It is from this point of view that we may look upon the courses for the new degree in nutrition. Taught to appreciate that nutrition is concerned with all aspects of food production, preparation and consumption, graduates in nutrition should not only provide the future teachers of nutrition, but might well be expected to produce a new attitude to nutrition in those who are ultimately responsible in so many ways for feeding us and our fellow human beings.(196)

In "Fighting Food Faddism", Yudkin explained the rationale behind the new course in more detail:

...we sincerely believe that we can produce real nutritionists - not merely chemists, or doctors, or agriculturalists who have a leaning towards the nutritional aspects of their own specialty. And if we can do this, there will be at least a chance that the wider education in food and nutrition - to schoolchildren, domestic science teachers, doctors, nurses and eventually the public as a whole - will one day be undertaken by those who have themselves studied nutrition as an integrated scientific discipline and not by those who have received it from third or fourth hand. We hope that these graduates will hasten the day when we really can answer satisfactorily the present unanswerable question - "Who is to teach the teachers: Who is to educate the food educators?(197)

The development of Yudkin's views on the nutritional origins of "Diseases of Civilisation"

In January 1955, with a letter to The Lancet, Yudkin set about the task of correcting the unsound nutritional knowledge in "letters in the medical journals". Johan E.Nyrop of Copenhagen had written to The Lancet in December 1954 suggesting that a decreased intake of essential fatty

acids(198) and an increased consumption of hardened fat(199) was an aetiological factor in lung cancer.(200) Yudkin argued against this, pointing out the paucity of the experimental evidence, suggesting that Nyrop had fallen into "the common trap of 'correlation equals causation'" and in particular taking issue with Nyrop's claim that margarine was almost devoid of essential fatty acids.(201) The debate on this issue lasted several months, and Yudkin contributed a further letter in April 1955.(202) About a year later he was drawn into a further exchange when Sinclair opened a three page letter to The Lancet as follows:

Scant attention seems to be paid by the medical profession and by food administrators to a very important change in the dietaries of the more civilised countries that has been occurring over recent decades with increasing intensity. I refer to a chronic relative deficiency of the polyethenoid essential fatty acids (E.F.A.). It is true that the matter was raised in your columns a year ago, but then no less a person than a professor of nutrition [i.e. Yudkin] stated that such deficiency rarely if ever occurs in man; Professor Yudkin, however, has the advantage of not having worked upon E.F.A. Our own experimental work, humble in scope, combined with a careful assessment of the literature, has led us to exactly the opposite conclusion. The causes of death that have increased most in recent years are lung cancer, coronary thrombosis and leukaemia; I believe that in all three groups deficiency of E.F.A. may be important. Your readers with stereotyped minds should stop reading at this point.(203)

Sinclair went on to document the evidence which supported his claims, and to complain about the lack of facilities and finance which he was suffering in Oxford.(204) Yudkin's reply, published two weeks later, gently but patronisingly mocked Sinclair, but did not dismiss his thesis out of

hand. Yudkin did take issue however, as he had with Nyrop, on the question of the essential fatty acid content of margarine.(205) These letters to The Lancet were Yudkin's opening shots in a campaign against the emphasis on the consumption of fat as an explanation of the increasing incidence of certain "diseases of civilisation"; this eventually led to the formulation of an alternative theory, which viewed increasing sugar consumption as the major aetiological factor.(206)

At about the same time as Yudkin was "Fighting Food Faddism" in The Lancet he was writing a popular book on slimming which was published in 1958.(207) He advocated a diet in which carbohydrate intake was severely restricted, but slimmers were told they could eat as much fat as they liked. He argued that this would produce a satisfying diet but would also reduce energy intake. He sought to reassure readers that such a diet would not increase the risk of coronary thrombosis:

...I am quite certain that there is no solid evidence that fat itself has anything to do with coronary thrombosis... I am quite certain that the best way of preventing coronary disease is not to be overweight, and not to become too sedentary.(208)

An editorial in the Archives of Internal Medicine in 1959 shows how Yudkin's theories of slimming and heart disease complemented each other. Yudkin pointed out to clinicians who were beginning to base advice to patients on the links which were claimed to exist between heart disease and fat intake, the tenuous nature of these links. In his conclusion, which discussed what family doctors should tell

patients, he suggested that they should

Especially... advise the avoidance of overweight. Curiously enough, the best way of doing this is by the deliberate restriction of carbohydrate only; this not only controls weight most easily, but also limits fat intake. As regards the patient already known to have hypercholesterolaemia [high blood cholesterol] or to have suffered from cardiac infarction, let us by all means restrict saturated fats and administer corn oil. But let us be ready to acknowledge that present therapy is based on expediency rather than science, and let us receive with open minds more logical measures as soon as they become available.(209)

But the rationale which lay behind both the theories of slimming and heart disease, was a theory of dietary change in which he suggested that primitive man existed mostly on meat and small amounts of fruit, and therefore on^a high fat, high protein diet. With the development of agriculture the diet became much more carbohydrate-based. However, the richer people in the community who were able to eat more according to taste, tended to eat more meat and fruit, and therefore to revert back towards the primitive diet. In primitive societies, then, Yudkin suggested that eating according to taste inevitably resulted in a healthy diet. But according to Yudkin, food technology had allowed the separation of palatability from nutritive value. The prime example he gave of this was the use of refined sugar to make palatable foods of dubious nutritional quality. Yudkin claimed that the increase in sugar consumption was the main nutritional problem of the Western world.(210)

The "sociological and psychological aspects of nutrition"

In the later 1950s, and early 1960s, when not only was work on the nutritional aetiology of the diseases of

civilisation gaining wide publicity,(211) but the United Nations Freedom from Hunger Campaign was also highlighting nutritional problems in the underdeveloped world,(212) again the question of how the work of nutritionists was to be applied became an urgent problem. The problems in both the Western and the underdeveloped countries became defined by Yudkin as problems of changing food habits, but now the inadequacy of ordinary education in bringing about such changes was emphasised. Changes in food habits, it was suggested, could only be brought about on the basis of an understanding of the factors, particularly sociological and psychological factors, which determine food habits.

At around the time of the establishment of the Nutrition Degree Course, Yudkin often spoke of the need for students to study social aspects of nutrition,(213) and in the early years of the course social scientists visited the college to lecture to the students.(214) But in 1959 J.C.McKenzie,(215) a graduate in economics was appointed "Research Fellow in the Sociology of Nutrition", a post which was funded by a grant from the Leverhulme Trust,(216) and in 1960 R.H.J.Watson(217) was appointed Research Psychologist, funded by the DSIR. A "Social Nutrition Unit" was established and the department began to conduct its own teaching in sociology and psychology. Now "social aspects of nutrition" was not just another component of the course, but emphasis on the need for a thorough understanding of the causes of food habits became a cornerstone of the practice of the nutritionist. In September 1963 a

conference on "Changing Food Habits," was held at Queen Elizabeth College and was chaired by Mr J.P. Van den Bergh.(218) The conference papers were pre-circulated to 180 people, and it was attended by about 250.(219) The introductory paper, by Yudkin and McKenzie, explained that in drawing up the QEC social nutrition research programme they had

...realized that there was an enormous amount of relevant information, much of it unpublished, which has been collected by food manufacturers and the organizations which are concerned in helping them to market their products - advertising agents, public relations departments, market research teams. It became evident that the efforts of the academic research worker and the food manufacturer could to a great extent be complementary. The food manufacturer usually needs prompt decisions to ad hoc problems, and can rarely devote the time or the resources to undertake long-term basic research. The academic research worker on the other hand is interested to discover the underlying principles determining food choice. Yet clearly a knowledge of these principles would help to produce the answers to the food manufacturer's specific problems, just as the results of his attempts to answer these problems would be of use in helping him to formulate general hypotheses for his further research.

For these reasons, we began - at first tentatively and then with increasing confidence - to seek the advice of those in the commercial world whose interest in changing food habits was just as great as our own. With rare exceptions, we were made most welcome in our approaches, and often were met with quite overwhelming encouragement, support and help. We have been allowed access to confidential reports which have frequently been prepared at considerable cost; we have been given grants of money so as to accelerate our own investigations; we have been helped in the gathering of new information by being allowed to co-operate in commercially sponsored surveys.(220)

The conference included papers by Yudkin on "The Need for Change", (221) and papers by McKenzie, (222) two

sociologists, an anthropologist, and an experimental psychologist.(223) Arnold Bender, who worked for Bovril, gave a paper on "The Nutritionist in Industry".(224) The book of the conference papers included a "conspectus" by Yudkin and McKenzie:

We have sometimes been asked whether we believe it is possible to do worthwhile work on changing food habits in a wealthy country like Britain, when the main nutritional problem is in the larger populations of the poorer countries. We believe that there are two answers to this question. Firstly... the problem of encouraging a change in food habits exists in the wealthier countries. Secondly, we believe that the general factors that motivate people to choose a particular dietary pattern are likely to be universal, although their specific manifestations and their relative weight will no doubt differ in the different cultures. In addition, the techniques for studies on food habits are also likely to be of universal applicability. It is worthwhile then, to pursue our work in the more favourable conditions for research in this country, although it is hoped that we shall be able to test our hypotheses in other countries without excessive delay.

One can appreciate the imperative nature of the problem of the proper feeding of people, especially children, who are likely to suffer malnutrition or even death because of incorrect feeding. One's inclination to believe that nutritional instruction will inevitably result in the alteration of nutritional behaviour reinforces the wish to press forward with immediate programmes, rather than devote even a proportion of our limited resources to the study of basic problems of food choice. We suggest, however, that the success of the efforts to change food habits which have been made for fifteen years or more has been disappointingly limited. The time has come to ask whether we should by now not have done better if we had spent time in assessing the effectiveness of these efforts, and more particularly in studying the fundamental determinants of food habits and their relative importance, and then in examining the ways in which one or more of these determinants could be used to promote change.(225)

This emphasis on the need to study the "determinants

of food habits" was characteristic of the QEC approach to nutritional problems during the rest of Yudkin's tenure of the Chair of Nutrition. The greatest stress was placed on psychological and sociological rather than physiological factors, and economic factors were largely ignored, as is clear from this passage from Yudkin's contribution to the New Scientist's "1984 Series", in 1964. According to Yudkin's article, the major problem to be solved in the "impoverished countries" was

...how to persuade people to eat what is good for them and how to prevent them from eating what is bad for them. In other words the first problem is to persuade people accustomed to eating a narrow range of nutritionally poor foods to widen their choice so as to include the nutritionally more desirable foods, especially those rich in protein. We will need, for this purpose, information about what determines food habits and how people can be influenced to eat unaccustomed foods...(226)

In many respects Yudkin reproduced the position which had been held by Cathcart three decades earlier,(227) and the field that he hoped to develop had also been clearly outlined by the CNC shortly before the end of the war.(228) The view that ignorance rather than poverty is the cause of nutritional problems - and that this ignorance cannot be remedied by ordinary education, but only on the basis of an understanding of the factors causing food habits, was retained as an essential component of the QEC view of nutrition after Yudkin's departure from the Chair. Arnold Bender was appointed to a personal Chair of Nutrition in 1972 after Yudkin had retired. He spoke on "The Wider Knowledge of Nutrition"(229) for his inaugural lecture in

1972 and he defined nutrition as "the study of food in relation to man; and the study of man in relation to food." When discussing the "breadth" of nutrition ("from the soil to the cell"), he declared:

After food had become available [to the consumer] economics, tradition, religion and custom affect what people actually consume, so the nutritionist must enter the fields of sociology and psychology if he is to understand the motives of his fellow men, and particularly if he wants to change their opinions and actions.(230)

Later, he introduced a section of his speech on "The Study of Man" as follows:

There is often a tendency to look upon undernutrition as the result, mainly, of poverty... However, the classical picture which we show our students is important, not only because it shows two infants - kwashiorkor being the disease the first child gets when it is weaned because the second has arrived - but because the mother is well and expensively dressed. It is not poverty but ignorance that is the cause of the problem.(231)

Bender became head of the Department in 1978 and continued to advance these points of view.(232) In the following chapter, we will return to discussion of the sociology of science, and in the light of this, we will consider the explanation of the genesis and sustenance, and the implications of Yudkin's formulation of nutrition.

CHAPTER SIX: CONCLUSIONS.

In this final chapter I will draw some conclusions from the previous chapters. I will suggest an explanation of Yudkin's formulation of "Nutrition" after the Second World War according to the method discussed in Chapter One. That is, I will consider the cultural resources available to Yudkin, important features of the social-structural context in which he operated, and his interests. I will then suggest how his particular formulation of "Nutrition" was conditioned by his interests.

In earlier chapters, there have generally been sufficient archival records on which to base the account and analysis of events. In this last section however, where we are concerned with relatively recent events, the central participant in which is still alive, the records available are less adequate. For this reason, before going on, there is a need to return to the discussion of the sociology of science which we began in Chapter One, and to consider carefully the question of the imputation of interests.

6.1. THE IMPUTATION OF INTERESTS.

Barnes discusses the imputation of interests in a chapter on "The Problem of Ideology" in Interests and the Growth of Knowledge.⁽⁰¹⁾ Here he reconsiders the utility of the concept of ideology in view of his argument for the interest-inspired nature of knowledge. He argues that "ideology" should be retained and can do "useful sociological work" when "ideological determination" is deployed as follows:

:

...wherever knowledge is ideologically determined there is disguise or concealment of an interest which generates or sustains the knowledge, or to put it another way, of the problem to which the knowledge is actually a solution. This gives us a basis for the definition of ideological determination. Knowledge or culture is ideologically determined in so far as it is created or sustained by concealed, unacknowledged, illegitimate interests.(02)

We may see how Barnes's conception of ideology is linked to his general theory of knowledge generation in the following quotation:

Knowledge grows under the impulse of two great interests, an overt interest in prediction manipulation and control, and a covert interest in rationalisation and persuasion. Our definition of ideological determination has essentially identified it as a mode of operation of this second great interest.(03)

Barnes suggests that concealed interests may be identified by the "subjective experimental approach" which has been characterised as "taking the role of the other" and "empathy". This, he argues is "genuinely empirical and experimental" and "capable of intersubjective checking and replication as much as any scientific procedure."(04) We can impute Yudkin's interests according to the method which Barnes outlines using our knowledge of the context in which he operated, by "putting ourselves in his place" and considering what were the key problems which he faced.

The next question to consider, after an actor's interests have been imputed, is that of the nature of the link between the interests and the knowledge produced. Barnes illustrates this problem by discussing MacKenzie's account of the controversy between the Mendelians and Biometricians.(05) He argues that, situated at the

particular time and in the particular context with which MacKenzie was concerned that "biometry was a form of bourgeois -liberal thought and the Mendelism then opposed to it, a manifestation of conservative thought", (06) and then goes on to clarify what is meant by this. The implications of the imputation, he explains

...lie at the structural level. The central claim being made is that, in the absence of the social-structural factors referred to, the controversy would never have emerged, at least in the particular form observed. (07)

This is not to say that Barnes is opposed to the study of individuals in the sociology of science (for this would appear to contradict his earlier remarks about the empathetic method), and he actually describes studies of individuals as of "paramount importance". (08) His argument is rather that evidence arising out of studies of individuals should be used to support sociological-structural hypotheses rather than psychological hypotheses about individuals. He warns that explanations of scientific ideas by reference to the political ideas, background, previous experience, or general social position of actors as though these factors have "determinate predictable effects", (09) must be avoided because such explanations require "detailed assumptions about individual psychology, and about the psychology of particular individuals, which we are in no position to make." (10)

Turning to our own subject matter, the implication of the above discussion (if we accept Barnes's approach) is

that we should not seek reasons why Yudkin had to formulate nutrition after the war, and reasons why he had to formulate it in the particular way that he did. Rather we must take it that he chose to formulate "nutrition", and having made this choice there was any number of forms that his formulation could take. But using the empathetic method we can understand the problems which somebody in Yudkin's position faced - we can impute his interests - interests which have their origin not in his psychological make-up but in the social structure and his place in it - given that his goal was the formulation of nutrition. We can then see how he selected from existing cultural resources in order to reach a definition of nutrition which could potentially solve the problems which he faced - which could serve his interests. If we do all this we can claim to have shown that interests conditioned Yudkin's formulation of nutrition (because the formulation can further the interests) without claiming to have shown that this particular formulation was necessarily determined by the interests. What will be claimed is, (echoing Barnes) that in the absence of the social-structural factors referred to, Yudkin's particular formulation of nutrition would never have emerged.(11)

6.2. YUDKIN'S FORMULATION OF NUTRITION.

Cultural resources

In formulating nutrition Yudkin had to consider both means of studying and means of applying the subject.

Regarding means of studying nutrition, the most important means available revealed by our early chapters are as follows: the methods of clinical assessment;(12) the biochemical means of assessment;(13) whole-body metabolic studies;(14) laboratory research with experimental animals;(15) interacting clinical and laboratory research;(16) dietary studies which aimed to provide estimates of food requirements;(17) dietary studies which aimed to assess the "state of nutrition" by comparing the results with estimates of nutritional requirements.(18)

Regarding the application of nutritional knowledge, there was firstly the view that the application of nutritional knowledge was exceedingly complex, and that it was only grass-roots activity which would have any likelihood of success.(19) Secondly, there was ^{the} view that the application of nutritional knowledge by the government, medical profession and the public, could be channelled through a government-sponsored organisation, consisting of the most eminent workers in the field.(20) Implicit in this approach was the assumption that, once the government and medical profession had accepted the knowledge, application was relatively simple. Thirdly, there was the approach which "reduced" the problem of inadequate nutrition to lack of income and which favoured state intervention to increase the purchasing power of the poor.(21) Finally, there was the view that the study of nutrition should proceed as an academic scientific enterprise, a point of view which is evident in the account of the development of the Nutrition

Society.(22) Either the nutrition scientists should then not concern themselves with the application of the knowledge which they produce, or else, as Garry's view implied "application" was matter of making "nutrition" a true "meeting place" of of the relevant sciences and scientists.(23)

The social context

One aspect of the social context in which Yudkin formulated nutrition was that of the imminent dismantling of the Government's wartime food system. The success of this system was taken by many as vindication of the demands of the "nutrition movement", but towards the late 1940s there was also the gathering strength of the post war reaction against the 1930s scientific radical movement, which Werskey has described. This atmosphere, as Werskey put it, encouraged "...a new generation of scientific workers not to meddle in (radical) politics."(24) That Werskey's outline of developments is applicable to the situation in nutrition science is clear from the post war ban on human nutrition work at the Rowett Research Institute, the reaction of certain members of the Nutrition Society to the "infiltration" by the World Federation of Scientific Workers, and the reaction of some to Boyd Orr's suggestion that the Nutrition Society should be involved with formulation of government policy on flour improvers.(25)

The post war policy of the MRC towards nutrition, exemplified by Mellanby's dismissive remarks about the

Nutrition Society,(26) is highly significant. Yudkin's lack of funding by the MRC during his early years at QEC may be the result of the MRC's general policy, but may, more specifically, be due to the result of his excursions into political matters. The article in The Times in 1942 was unsigned, but the article in Food Manufacture was signed.(27) The proposal for a Nutrition Council was clearly a challenge to Mellanby's authority, and, as we have seen in Chapter Four, Mellanby jealously defended his position with regard to the provision of nutritional advice to the Government. A major feature of the debate in The Times, was the question of whether or not the proposed Nutrition Council should be administered by the MRC.(28) The conclusions of Yudkin's 1944 article in The Lancet were also overtly political.(29) But Yudkin's ambitions for the development of a Nutrition Department at Kings College of Household and Social Science were probably also seen by Mellanby and the MRC, as in opposition to their own plans for Platt and the development of the Nutrition Department at the London School of Hygiene and Tropical Medicine.(30)

Another significant factor was Yudkin's position as Professor of Physiology in what was essentially a domestic science college, and his consequential isolation from medical education or clinical practice. But Yudkin was also aiming to establish the new degree in nutrition at a time when the medical profession, through the BMA's Committee on Nutrition, of which he was a member, and which reported in 1950, was reasserting its prerogative to pronounce on

nutritional matters.(31) Later, during the 1950s, further important features of the social context were the upsurge of popular interest in slimming and the possible nutritional origins of the "diseases of civilisation", (32) and in the early 1960s the renewed interest in the problem of inadequate nutrition in the underdeveloped world.(33)

Yudkin's interests

Moving on from these considerations of the cultural resources and the social context, we are now able, by the empathetic method discussed earlier, to impute Yudkin's interests. Firstly, being based at a domestic science college, it would not be easy for Yudkin to justify the establishment of a new discipline for the pursuit of knowledge for its own sake. It was in his interests to formulate nutrition as an applied rather than as a pure science.(34) Secondly - given the longstanding use of "nutrition" as a "clinical state" by the medical profession, and the fact that influential medical men of the University of London could undoubtedly affect Yudkin's chance of success in establishing the new nutrition department and degree, and given the fact of the 1950 BMA Report on Nutrition, it was in his interests when formulating nutrition as an applied science, to carefully consider the relationship between "nutrition" and medicine, and between the "nutritionists" and medical men. Thirdly, due to Yudkin's reliance for funding upon the food industry it was in his interests to formulate nutrition in such a way that "nutritionists" would not be a threat but would

rather perhaps play a service role with respect to the food industry. Fourthly, given the political situation prevailing from the late 1940s and its consequences for science, - the reaction against scientific planning and planning of science, and the associated reassertion of science as high culture - it was clearly in Yudkin's interests carefully to avoid any definition of nutrition that would imply that knowledge would be applied either by the political or grass-roots activity of the practitioners. While nutrition would have to be an applied field it was in Yudkin's interests to be very careful about the way in which he specified application would be carried out. Finally, during the 1950s and early 1960s with the increasing of interest in slimming, diseases of civilisation, and third world malnutrition it was in Yudkin's interests, as a Professor of Nutrition, to formulate some approach to these problems.

Yudkin's Formulation of Nutrition and the general thrust of his research programme

The "nutritionists" whom Yudkin hoped to train at Queen Elizabeth College with the BSc Nutrition Course would clearly not be medically qualified, but if the difficulties of the 1930s regarding the assessment of state of nutrition were to be overcome, it would be advantageous to them to have means of assessing "state of nutrition" which would be acceptable to medical men. Clinical assessment of nutritional status by non-medically qualified nutritionists would be exceptionally difficult to institute, but

assessment by laboratory tests usually involved taking samples of blood, and this too was the preserve of the clinician. The method of comparing the dietary intake of groups with estimates of requirements had also suffered from problems due to the criticism of clinicians.(35) During the late 1940s, when Yudkin attempted to work out correlations between clinical assessments of nutrition and assessments by the various other means available, he was pursuing a line of enquiry which could further his interests by making his "nutritionists'" assessments of the nutritional status more defensible. However, the quest for a means of assessment implied that the practice of "nutrition" would involve the monitoring of the nutritional status of the population. The information produced by this activity would then allow critical appraisals of government policies by the nutritionist or others. Such an approach held certain danger for a fledgeling university subject during the atmosphere of reaction against the radical movement. The BMA Report, drawing attention to the difficulties of clinical assessment, laboratory tests, dietary surveys, and the assessment of requirements, went on to call for more research in all of these areas.(36) However, when Yudkin dropped the emphasis on correlative studies and instead emphasised the difficulties of all means of assessing nutritional status, he was presenting more fundamental criticisms. He was now questioning the idea that the assessment of nutritional status should be so central to the study of nutrition,(37) and was developing

an idea of nutritionist as sceptic whose role would be in "Fighting Food Faddism"(38) by pointing out the complexity of nutrition and the pitfalls of simplistic approaches. This could further Yudkin's interests in two ways. Firstly, it could take the emphasis off assessment of the nutritional state of the population, and the implied critical approach to Government policy. Secondly, it could reassure the medical profession that the role of the nutritionists would not be that of constantly agitating for changes in medical practice. The "nutritionists" could probably also help to prevent some members of the medical profession's own ranks from making rash statements about nutrition. Also in furtherance of Yudkin's interest in retreating from anything political, by 1953, the means of "Fighting Food Faddism" was presented as a matter of involvement, at various levels, in conventional education.(39) In choosing this emphasis the less conventional methods of education which Cathcart had advocated during the 1930s were rejected.(40) These methods had run into political difficulties in the 1930s,(41) and had also been embraced by the political Children's Nutrition Council during the war.(42) The extensive system of food education which the Ministry of Food had established during the war, much of which was based on the approach Cathcart had advocated, was gradually being dismantled and to argue that nutrition was to be applied through, for example, the local activities of "Food Leaders" would be very much an attempt to swim against the

tide.(43) Putting the programme of "Fighting Food Faddism" into practice resulted in Yudkin's engagement in work on "diseases of civilisation", and on slimming.(44)

In the later 1950s and early 1960s, when the possible nutritional aetiology of degenerative diseases and the Freedom from Hunger Campaign was gaining wide publicity, the question of how the work of nutritionists was to be applied became a more challenging problem. It was still not in Yudkin's interests to propose political solutions, it was now to his advantage, as a Professor of Nutrition, to say something more than simply that nutritional knowledge should be applied by the involvement of nutritionists in some way with education. But in reformulating the means of application of nutrition, the interests of the food industry would have to be taken seriously because of the heavy reliance of the Nutrition Department upon the food industry for research funding. Now ordinary education as a means of applying nutritional knowledge was rejected and changes in food habits, it was suggested, could only be brought about on the basis of an understanding of the factors, (particularly sociological and psychological factors), which determine food habits.(45) The emphasis on sociological and psychological factors served the interests of Yudkin and the Nutrition Department in several ways. Firstly, it was the source of new problems to be researched. Secondly, as is quite apparent from the quotations given in the last section of Chapter Five, this emphasis was the justification of the continuing

disengagement of the nutritionists from any further social-political analysis and action.(46) And thirdly, it defined the problem in terms in which the food industry were seen to have a role in the solution.(47)

Finally, returning to the discussion with which we began this chapter, now we have discussed the thought of an individual scientist in detail, it must be re-emphasised that what is being proposed is a social-structural rather than a individual-psychological hypothesis. As Barnes has pointed out, such a hypothesis need not rely on the evidence of "head counts".(48) When I interviewed Original Members of the Nutrition Society in 1979 and asked "Do you think that the sociological and psychological aspects of nutrition are an important area of study?", some of those who had worked in the London area gave an answer similar to what one might have expected from Yudkin.(49) Many, however, spoke in terms which suggested that they were unfamiliar with or rejected Yudkin's approach to nutrition.(50) For example some started speaking about anorexia nervosa, one spoke of the importance of not eating between meals, and some appeared completely at a loss to know what to say.(51) This however only goes to show that "nutrition" as defined by the membership of the Nutrition Society is a very diffuse field. But it does suggest that Yudkin and the QEC suffered some lack of success within the wider field of nutrition science. Another indicator of this lack of success is the fact that the QEC Department of

Nutrition was not represented on the Committee which produced the ARC/MRC Report on Nutrition Research published in 1974; only a very small proportion of this Report was concerned with research into sociological and psychological factors and means of changing food habits.(52) But for members of the QEC School Yudkin's mature professional ideology has been remarkably flexible - providing a justification for many kinds of research.(53)

In the last two decades Yudkin's formulation of "social nutrition", has offered a rationale for the disengagement of "nutritionists" from social-political action. In the 1930s, the "nutrition movement" was led by scientists; in the 1980s this task was left to rock musicians; meanwhile the Head of the Nutrition Department at Queen Elizabeth College - still "fighting food faddism" among the public and in the medical profession - was writing a report applauding the nutritional value of potato crisps.(54)

APPENDIX ONE

List of Archives Consulted and Abbreviations used in Footnotes

<u>Abbreviation</u>	<u>Archive</u>
BMA	British Medical Association, Tavistock Square, London. Consulted: three volumes of documents related to the activities of the Nutrition Committee, 28/4/33 - 3/7/35; Science Committee Minutes 10/3/33.
DS	Some papers relating to the Informal Conferences of Nutrition Workers which preceeded the Nutrition Society were given to me Dr G.A.Pitt, of Liverpool University and editor the <u>British Journal of Nutrition</u> . (DS ICNW) I was also given a small number of papers by some other members of the Society, which are concerned with the Bureau of Nutrition Surveys, and with the Scottish Group. These papers are currently in my possession.
EM	Personal papers of E.Mellanby, held by his nephew, Dr George Little, Puttenham, Guildford. Assorted press cuttings, letters and published papers.
GN	Diaries of Sir George Newman, Library of the Ministry of Health, London.
GWSCDS	The Queen's College, Glasgow (formerly Glasgow and West of Scotland College of Domestic Science), 1, Park Drive, Glasgow. Consulted: Governors Minutes Books, press cuttings files.
KCL	King's College, London, The Strand. Consulted: Annual Reports of Queen Elizabeth College; Queen Elizabeth College Magazine; Miscellaneous papers relating to the Nutrition Department.
MRC	Medical Research Council, 20, Park Crescent,

London.

Consulted: Correspondence files and minutes relating to nutrition and nutrition scientists.

NS Nutrition Society, Chandos House, Chandos Place, London.

Consulted: Minute books and correspondence files.

PRO Public Records Office, Kew.

Consulted: files related mostly to the activities of the Ministry of Health; some Ministry of Agriculture files.

QEC Queen Elizabeth College, Campden Hill Road, London.

Consulted: Minute Books, and personal file of Edward Mellanby. These papers will soon be deposited with archives department of King's College London, The Strand.

RGIT Robert Gordons Institute of Technology, Aberdeen.

Consulted: Minutes and Proceedings of Governors, Domestic Science Committee.

SH Senate House, Malet Street, University of London.

Consulted: Correspondence relating to the establishment of the Chair of Dietetics, 1927 - 8; Senate Minutes.

Other archives consulted, not referred to in footnotes.

1. Hannah Dairy Research Institute, Ayr. Minutes of Joint Committee of Management 1927 - 32, Council 1932 - 60; Cuttings book.

2. Personal papers of F.G.Hopkins, held by Cambridge University Library. ADD 7620 AA/AAA. A miscellaneous collection of letters, press cuttings and other papers, many of them concerning the award of honorary degrees etc.

3. Rowett Research Institute, Bucksburn, Aberdeen. Press cuttings books.

4. Nutrition Abstracts and Reviews, Commonwealth Bureau of Animal Nutrition, Bucksburn, Aberdeen. Committee of Management and Managing Sub-committee minute books.

Other abbreviations for sources used in footnotes

<u>Abbreviation</u>	<u>Source</u>
Dir BS	Directory of British Scientists.
Med Dir	Medical Directory
WW	Who's Who/Who was Who.
WWBS	Who's Who in British Science.

<u>Name</u>	<u>Place of Interview</u>	<u>Date</u>
F.O. Arthur	London	18/2/55
G.D. Armstrong	Department of Experimental Pathology Newcastle University	10/2/55
J. Ashall	Royal Hospital for Sick Children, Glasgow	17/2/55
J. B. Mason	Rowett Research Institute Aberdeen	22/2/55
A. J. Baker	Director, Rowett	25/2/55
W. H. Barnes	Department of Biochemistry Liverpool University	21/3/55
A. B. Brown	Edinburgh	27/7/55

APPENDIX TWO

List of Interviews conducted

The first set of interviews conducted, marked with a '*', were with members of the Nutrition Society who appeared in both the 1942 and 1971 lists of members. Not all members falling into this category consented to give interviews. Several refused for reasons of ill-health, and prior engagements.

For the later interviews, which are not marked with an '*', an attempt was made to speak to members representing the different professions and disciplines involved in the Nutrition Society, in each of the areas visited. Some lapsed members were also interviewed at this stage.

The interviews were given on the understanding that any quotations used in thesis would be unattributed, and for this reason the extracts from interviews which appear in the text and in footnotes are unreferenced.

When "Place of Interview" is an institution this generally means that the interview took place at the interviewee's workplace, or former workplace. When only a town is mentioned, the interview generally took place in the interviewee's home.

In footnotes when information is ascribed to an "informant", this means that the information was given by a nutrition scientist in an informal situation, rather than during a pre-arranged taped interview.

<u>Name</u>	<u>Place of Interview</u>	<u>Date</u>
F.C.Aitken	Aberdeen	18/2/80
D.G.Armstrong	Department of Agricultural Biochemistry Newcastle University	10/3/80
G.Arneil	Royal Hospital for Sick Children, Glasgow	17/12/79
J.S.D.Bacon	Rowett Research Institute Bucksburn, Aberdeen	6/2/80
A.Z.Baker	Tiverton, Devon	5/4/80
M.McC.Barnes	Department of Biochemistry, Liverpool University	21/3/80
M.A.Beale	Birmingham	27/3/80

List of Interviews conducted - continued.

T.D.Bell	Commonwealth Bureau of Nutrition Rowett Research Institute Bucksburn, Aberdeen	1/2/80
K.L.Blaxter	Rowett Research Institute Bucksburn, Aberdeen	28/1/80
* R.G.Booth	St Albans	16/11/79
M.A.Boyle	Leeds	14/3/80
A.Boyne (not taped)	Rowett Research Institute Bucksburn, Aberdeen	7/2/80
* R.Braude	National Institute for Research into Dairying Shinfield, Reading	12/11/79
H.G.Bray	Department of Biochemistry Birmingham University	26/3/80
J.M.Brockway	Rowett Research Institute Bucksburn, Aberdeen	6/2/80
L.W.Burnet	Queens College, Glasgow	13/12/79
C.S.Cameron	H.M.Inspector of Schools Office, Glasgow	19/12/79
M.I.Chalmers	Rowett Research Institute Bucksburn, Aberdeen	4/2/80
J.W.Chambers	Glasgow	14/12/79
J.L.Clapperton	Hannah Dairy Research Institute, Ayr	16/1/80
A.S.Cole	Department of Biochemistry Bristol University	31/3/80
* A.M.Copping	London	14/11/79
J.A.Crichton	Aberdeen	18/2/80
* E.M.Cruikshank	Cambridge	20/11/79
* D.P.Cuthbertson	Department of Pathological Biochemistry Royal Infirmary, Glasgow	1/11/79

List of Interviews conducted - continued.

J.W.Czerkowski	Hannah Dairy Research Institute, Ayr	15/1/80
J.Davidson	Rowett Research Institute Bucksburn, Aberdeen	12/2/80
* A.N.Duckham	Reading	10/11/79
* A.Eden	ADAS, Brooklands Avenue, Cambridge	19/11/79
G.M.Ellinger	Rowett Research Institute Bucksburn, Aberdeen	12/2/80
W.C.Evans	Department of Biochemistry and Soil Science, University College of North Wales	25/3/80
M.F.Fuller	Rowett Research Institute Bucksburn, Aberdeen	11/2/80
* R.C.Garry	Comrie, Crieff, Perthshire	31/10/79
G.A.Garton	Rowett Research Institute Bucksburn, Aberdeen	12/2/80
Gill, J.C.	Rowett Research Institute Bucksburn, Aberdeen	13/2/80
J.Glover	Biochemistry Department Liverpool	20/3/80
J.F.D.Greenhalgh	North of Scotland College of Agriculture, Aberdeen.	15/2/80
W.A.Greig	Veterinary Hospital, Glasgow	20/12/79
F.C.Happold	Carnford	17/3/80
R.L.Hartles	School of Dental Surgery, Liverpool	20/3/80
D.Harvey	Kinellar, Aberdeenshire	19/2/80
R.G.Hemingway	Veterinary School, Glasgow	20/12/79
K.Hillson	Faculty of Education Birmingham Polytechnic	27/3/80

List of Interviews conducted - continued.

* D.Hollingsworth	Institute of Biology, London	6/11/79
R.E.Hughes	Department of Applied Biology, University of Wales Institute of Science and Technology, Cardiff	3/4/80
* G.N.Jenkins	Department of Oral Physiology, Dental School, Newcastle-upon-Tyne	28/11/79
A.S.Jones	Rowett Research Institute Bucksburn, Aberdeen	12/2/80
M.Kay	North of Scotland College of Agriculture, Aberdeen.	15/2/80
R.N.B.Kay	Rowett Research Institute Bucksburn, Aberdeen	4/2/80
* S.K.Kon	Lower Langford, Bristol	17/11/79
D.Kulka	Birmingham	29/3/80
D.M.S.Livingstone	Aberdeen	10/3/80
G.E.Lamming	Loughborough	10/4/80
B.M.Llewelyn	School of Home Economics University College Cardiff	2/4/80
G.M.Lockie	Aberdeen	20/2/80
* R.A.McCance and * E.M.Widdowson	Addenbrookes Hospital, Cambridge	21/11/79
(interviewed together)		
M.W.McMahon	Birstall, Leicester	8/4/80
J.MacWillie	Leeds	13/3/80
A.K.Martin	Hannah Dairy Research Institute, Ayr	15/1/80
F.J.W.Miller	Medical School Newcastle University	11/3/80
C.F.Mills	Rowett Research Institute Bucksburn, Aberdeen	7/2/80

List of Interviews conducted - continued.

F.E.Moon	Kendal	15/3/80
* T.Moore	Cambridge	21/11/79
H.G.Morgan	Department of Pathological Biochemistry, Royal Infirmary, Glasgow	18/12/79
* M.Olliver	Histon, Cambridge	19/11/79
* E.C.Owen	Ayr	2/11/79
J.Pemberton	Sheffield	12/4/80
* R.Peters	Cambridge	22/11/79
* N.W.Pirie	Rothamsted Experimental Station, Harpenden	16/11/79
G.A.J.Pitt	Department of Biochemistry, Liverpool University	24/3/80
A.Pollard	Bristol	1/4/80
* M.Pyke	London	15/11/79
J.Quarterman	Rowett Research Institute Bucksburn, Aberdeen	7/2/80
J.A.F.Rook	Hannah Dairy Research Institute, Ayr	14/1/80
W.T.Rowlands	Bangor, Gwynedd	25/3/80
V.Schwarz	Medical Biochemistry Department, University of Manchester	18/3/80
R.C.Seeley	Department of Agricultural Biochemistry Newcastle University	10/3/80
* H.M.Sinclair	International Institute of Human Nutrition Sutton Courtenay	13/11/79
* G.Slavin	Weybridge	8/11/79
* J.A.B.Smith	Ayr	2/11/79

R.H.Smith	Rowett Research Institute Bucksburn, Aberdeen	13/2/80
W.Steele	Hannah Dairy Research Institute, Ayr	16/1/80
R.Sutherland N.R.Taggart	Harrogate School of Domestic Science, Aberdeen	12/3/80 14/2/80
A.Thompson	Department of Agricultural Biochemistry Newcastle University	11/3/80
* S.Y.Thompson	Reading	9/11/79
* A.M.Thomson	MRC Unit, Princess Mary Maternity Hospital, Newcastle-upon-Tyne	28/11/79
W.Thomson	Aberdeen	19/2/80
G.Tobin	Department of Physiology Leeds University	14/3/80
J.H.Topps	North of Scotland College of Agriculture, Aberdeen.	15/2/80
R.Tunbridge	Leeds	13/3/80
D.H.Valentine	Didsbury, Manchester	18/3/80
F.W.Wainman	Rowett Research Institute Bucksburn, Aberdeen	5/2/80
H.D.Walker	Aberdeen	15/2/80
A.H.Ward	Aynsome Laboratories, Grange-over-Sands	17/3/80
N.Wattie	Glasgow	17/12/79
D.W.West	Hannah Dairy Research Institute, Ayr	17/1/80
J.D.Wood	Langford, Bristol	1/4/80
A.A.Woodham	Commonwealth Bureau of Nutrition Rowett Research Institute Bucksburn, Aberdeen	1/2/80

List of Interviews conducted - continued.

* A.N. Worden	Wolfson, College, Cambridge	22/11/79
* J. Yudkin	London	27/11/79

APPENDIX THREE

Some details and discussion of, and extracts from interviews.

Each interview consisted of two main parts - a section during which the interviewee was asked questions about his/her education and career was followed by a series of general questions. The general questions sought firstly to elucidate the interviewee's definition of "nutrition", and their perception of the relationship between their own activity and the subject. Secondly the interviewee's experience of the Nutrition Society was explored. The general questions included, for example the following:

1. Do you consider yourself to be a nutritionist?
2. Do you consider nutrition to be a science?
3. Do you think that it is a good idea to set up nutrition departments in universities?
4. What do you see as the major advances in nutrition over the last forty years or so?
5. How would you like to see the subject develop in the future?

Here, in order to illustrate the point that "nutrition" as defined by the membership of the Nutrition Society is a very diffuse field, I will list some extracts from the responses to some of these general questions. I have chosen twenty extracts of answers to questions 1 and 4 listed above.

Extracts from interviews

I Examples of responses to the question: "Do you consider yourself to be a nutritionist?"

1. No I was a physiologist.
2. I'm labelled a pathological biochemist.
3. A nutritionist for want of something better.
4. It's only a sideline, I'm a bacteriologist.
5. I'm interested in nutrition as an analytical chemist.

6. I would go no further than an applied biologist.
7. I'm a human nutritionist.
8. A biochemist with an interest in nutrition.
9. A lapsed nutritionist.
10. Yes... nutrition is such a very wide subject that one can very easily hide under that umbrella...
11. An animal nutritionist... but when occasion demands... I'm a chemist.
12. No, a dietician.
13. What is a nutritionist? I don't know... I put down medical reserch... never a nutritionist.
14. Probably not... these women are most important... who are nutritionists... in hospitals.
15. It depends on where I am.
16. I'm concerned with practical animal husbandry and management of which nutrition is but one facet.
17. No I'm a vetinary clinician.
18. A nutritional biochemist.
19. If I'm anything I'm a nutritionist - I'm a mixture.
20. No a paediatrician with an interest in nutrition.

II Examples of responses to the question: "What do you see as the major advances in Nutrition Science over the past forty years or so?"

1. ...the realisation that you have to balance food intake with energy output...
2. ...particularly the trace element field...
3. ...that could be two or three volumes of a book... there have been tremendous advances in the appreciation of what is required by animals...
4. Probably a very great advance has been the sorting out of the causes of kwashiorkor...
5. Knowledge of what happens to the amino acids through the process of digestion...

6. ...the invention of a method of adding vitamin A to a complete calf diet.
7. ...getting expert biochemists on the job.
8. ...the elucidation of the part nutrition plays in Coronary Heart Disease, certain forms of cancer and all these degenerative diseases.
9. ...we know a good deal about human requirements but we also know that you cannot lay down any absolute.
10. ...I suppose the completion of the roster of vitamins.
11. ...I don't want to be cynical but it seems to me that in many things there have not been advances but the churning about of opposing ideas...
12. ...I find it awfully difficult to think of anything that has happened so dramatically since the beginning of the war...
13. ...I think in the line of food analyses...
14. ...our knowledge of the requirements of animals has been far better defined...
15. ...possibly the gradual recognition by nutritionists that peoples' nutritional behaviour is an important part of nutrition...
16. The recognition that poverty and ignorance underly a great deal of poor nutrition...
17. I think the realisation that individual requirements are so different from the average...
18. A tremendous lot has been done on protein-energy malnutrition...
19. I should think the discovery of some of the vitamins and some of the trace elements...
20. ...advances on the protein front have been enormous...

In general it might be said, as might be expected, that the answers to the general questions were most well formulated by interviewees who were, or who had been senior members of institutions in which "nutrition" is the major focus.

If it were thought desirable for the Nutrition Society

to be the focus of future studies, and if one wished to identify elements of culture which are shared by all the members, and by sub-groups within the Society I would suggest that it would be useful to follow up interviews of the type described here with some further research using questionnaires. The data produced by the interviews would guide the design of the questionnaires. From the point of view of the sociology of knowledge, such a study of the Nutrition Society might form a source of insights which would aid analyses of the construction of nutritional knowledge and the genesis and course of controversies, but it would have to be supplemented, in any case, by a detailed study of the knowledge construction or controversy in question. It appears from the interviews conducted during the course of the present thesis, that many members of the Nutrition Society describe their work as "nutrition" and themselves as "nutritionist" only when they believe this to be in their interests - i.e. they have possible alternative descriptions of themselves and their work. This being the case, for the sociology of knowledge, focus on the Nutrition Society can only be of limited value. Furthermore, questionnaires may give more clear-cut answers than interviews to the questions of Nutrition Society members' definitions of "nutrition" and their own activities, but these answers may be artificially clear-cut. The preferred focus in future studies, I would suggest, should be on specific controversies, or on specific advances in knowledge, teaching or research institutions, or individuals nutrition scientists.

FOOTNOTES TO CHAPTER ONE

(01) The point that "nutrition" as defined by the activities and membership of the Nutrition Society is a very diverse field soon emerged from my early interviews with the longest-standing members of the Nutrition Society. (See Appendix II.) Having been members of the Society for so long, they might have been expected to be particularly committed to nutrition, and to be prepared to describe themselves as "nutritionists". Alternatively one could suppose that since the formative years of these scientists were before the existence of the Society, and the first University Nutrition Department - institutions from which a unitary view of nutrition (a professional ideology) might emerge - they can be expected to have diverse conceptions of nutrition. However later interviews with more recent members confirmed the view that neither the foundation of a university nutrition department nor the activity of the Nutrition Society itself, have resulted in members of the Society adhering to a unitary view of nutrition. (See Appendix III for some extracts of interviews which illustrate the diversity of the membership of the Nutrition Society.)

(02) The description of my scientific actors as "nutrition scientists" is pragmatic, and means simply that, however they would describe themselves, some of their work was devoted to nutritional problems. Their selection depends upon their involvement in the institutions on which we will concentrate. The reasons for the focus on these institutions are given in the text, (see pages 36 - 40).

(03) The key text is Mannheim's essay on "Conservative Thought". See Mannheim (1953), 74 - 164.

(04) Mannheim's essay on "Conservative Thought", referred to in the last footnote, was first published in 1927, and was an attempt to exemplify a general approach to the sociology of knowledge which he outlined two years earlier in an essay entitled "The Problem of the Sociology of Knowledge". See Mannheim (1952), 134 - 90.

(05) See Mannheim (1953), 75.

(06) Ibid.

(07) Ibid. The first reference to "style" in Mannheim's work occur in an annual collection of essays on the history of art, published in 1923, at a time when his interests were turning from philosophical to sociological questions. See "The Interpretation of Weltanschauung", Mannheim (1952), 33 - 83. He referred here to "style" as an example of a "novel kind of object", which had been brought into being by use of "scientific abstraction" in aesthetics. Ibid., 35.

(08) See Mannheim (1953), 76.

FOOTNOTES TO CHAPTER ONE

(09) Ibid., 76 - 77.

(10) Ibid., 78. Mannheim develops the concept of "basic intention", from Alois Riegl's concept of "art motive", which, he explains, means "the striving for a certain form of art, of which every style is an expression". For references to Riegl see Mannheim (1952), 76 - 79.

(11) See Mannheim (1953), 78. Mannheim contrasts his position with Riegl's, for whom "art motive" needs "no further causal explanation and has no particular social roots". In "Conservative Thought", "basic intention" seems to take the place of "commitment" as a category which links styles of thought with social groups in the scheme proposed in "The Problem of the Sociology of Knowledge". See Mannheim (1952), 183 - 4.

(12) Mannheim (1953), 79 - 98. During his preamble Mannheim also makes explicit an important distinction between 'conservatism' and 'traditionalism' as follows: "Traditionalism signifies a tendency to cling to vegetative patterns, to old ways of life which we may well consider as fairly ubiquitous and universal... 'Conservative' action, however, is always dependent on a concrete set of circumstances. There is no means of knowing in advance what form a 'conservative' action in the political sense will take, whereas the general attitude implied in the term 'traditionalist' enables us to calculate more or less accurately what a 'traditionalist' action will be like." (Ibid., 95.)

(13) Ibid., 116.

(14) Ibid., 114.

(15) Ibid.

(16) Ibid.

(17) Ibid., 115.

(18) Ibid., 116.

(19) Ibid., 117.

(20) Ibid., 117 - 18.

(21) Ibid., 119 - 164.

(22) See Mannheim (1940), 48.

(23) See, for example *ibid.*, 3.

(24) See Barnes (1977), 3.

FOOTNOTES TO CHAPTER ONE

(25) Mannheim puts forward the doctrine of "Truth in History" in "The Problem of the Sociology of Knowledge" as a means of overcoming the inadequacies of Max Scheler's "static systematizing approach". Scheler, he explains, "...seeks to ascertain timeless characteristics of man, and to explain any concrete historical situation as a complex of such characteristics". Mannheim introduces "Truth in History" as a "metaphysical assumption" that "the global process within which... intellectual standpoints emerge is a meaningful one." This, he argues, provides a solution to the problem of "absolute truth", which Scheler locates in his static system. According to Mannheim's view the problem of "absolute truth" now corresponds to the problem of "the nature of the unitary meaning of the process [of history] as a whole." This "dynamic conception of truth and knowledge", Mannheim says, makes way for a dynamic sociology of knowledge, the "central problem" of which is that of "the existentially conditioned genesis of the various standpoints which encompass the patterns of thought at any given epoch." See Mannheim (1952), 156 - 7, 179 - 80. The doctrine of "Truth in History" was later termed "relationism." See Mannheim (1940), 253 - 4.

(26) See Barnes (1977), 87, footnote 1, and Mannheim (1940), ch 5 pt 4. Mannheim replaced "style of thought" in the 1931 encyclopedia article with the term "perspective", which again indicates Mannheim's tendency to revert to a contemplative account. See Ibid., 243 - 44.

(27) See Barnes (1977), ch 1.

(28) See footnote 25, and Mannheim (1940), 237 - 80.

(29) See Bloor (1976), 8.

(30) See Barnes (1977), 44.

(31) Ibid., 18.

(32) Ibid., 38.

(33) Ibid., ch 1.

(34) Ibid., 25.

(35) Ibid., 58.

(36) Ibid., 58 - 69, 85.

(37) Ibid., 85.

(38) Mannheim's interest in developing this topic is evident in his 1925 essay. See Mannheim (1952), 146, footnote 1.

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(39) Ibid., 186.

(40) See Mannheim (1953), 77.

(41) See Bloor (1976), 54.

(42) Bloor has also used Mannheim for similar purposes in a later book (see Bloor (1983), ch 8). Bloor explains the "Strong Programme" in Bloor (1976), 2 - 5.

(43) See Caneva (1978).

(44) Ibid., 157.

(45) Ibid., 159.

(46) MacKenzie (1977), ch 6, and MacKenzie (1981), 142 - 50. For an example of an application of the conservative/natural law dichotomy to even more recent history of science, see Harwood (1976), (1977), (1979).

(47) See Coleman (1970).

(48) See MacKenzie (1981), 144.

(49) Ibid., and Coleman (1970), 274 - 5.

(50) Ibid., and Wynne (1977) and (1979). There has been some criticisms of Wynne's empirical research, and Wynne has recently conceded a number of points. These criticisms however do not bear upon MacKenzie's reference to Wynne, nor to my own use of Wynne's theoretical discussion later in this chapter (on pages 24 - 6). See Wynne (1985).

(51) MacKenzie (1981), 143.

(52) Ibid., 132 - 4.

(53) Ibid., 143.

(54) Ibid., 149.

(55) MacKenzie (1977) ch 3, 4 and 5, and MacKenzie (1981) ch 2.

(56) Wynne (1977), 53 - 58, 344 - 47.

(57) See Forman (1971).

(58) Mannheim (1953), 118.

(59) See Wynne (1977), 245.

(60) Ibid., 346.

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- (61) I am refering here to the opening paragraphs of section 1.3.
- (62) See page 11 of this thesis.
- (63) See MacKenzie (1977), 446 - 47.
- (64) See Geison (1978) and (1972).
- (65) Hopkins, Sir Frederick Gowland, (1861-1947). See Needham and Baldwin (eds) (1949). For biographical and other details of Hopkins see Baldwin (1972), Hopkins (1949), Dale (1948) and Crowther (1952), 197 - 247, Stephenson (1948), (1949); also this thesis page 44.
- (66) Hopkins was awarded the Nobel prize in 1927, jointly with the Dutchman Eijkman. (See Jansen (1950) and (1956).)
- (67) Kohler R.E. (1972), (1973) and (1978) and (1982).
- (68) See Werskey (1971) and (1978).
- (69) See MacLeod (1975).
- (70) See Ihde and Becker (1971). Other work along similar lines is Follis (1960) and Carter (1977).
- (71) See Petty (1985).
- (72) Ibid., 1.
- (73) This was a body which began its operations in 1935, and which aimed to rationalize the provision of unemployment relief. See Gilbert (1970), 181 - 3.
- (74) This refers to the Report on Social Insurance and Allied Services by Sir William Beveridge, which was published in 1942 and which formed the basis of the social legislation of the Labour Government of 1945 - 50.
- (75) Petty (1985), 24.
- (76) See Webster (1982).
- (77) Ibid., 110.
- (78) Ibid., 123.
- (79) See Shardlow (1977). Two other theses that aim to take a sociological approach to aspects of the history of nutrition science are Zaleski (1975), and Radford (1976). A major weakness of Zaleski's thesis is that, like Shardlow's it relies entirely on published material. At one point Zaleski employs the terminology of Kuhn (1970) to describe the discovery of vitamins, but this adds little to the more

straightforward presentation of Ihde and Becker (1971).

Radford is concerned with the influence of certain "external" factors in a particular scientific controversy - the controversy over the aetiology of coronary heart disease. Radford's analysis rests upon his own assessment of the scientific theories. He refers, for example to the dietary fat as the "least proveable... of the several dietary hypotheses" (239). In addition, ignoring the professional interests of some of the scientists, he takes their remarks at face value in order to support his own position. (See, for example, Radford's use of J.Yudkin's comments on the 1974 Agricultural Research Council/Medical Research Council's 1974 Report on Nutrition (240).)

(80) This question of means of assessment of the "state of nutrition" is touched upon at several points in this thesis, such as on pages 83 - 7, 132 - 4, 172 - 3, 215 - 6, 260 - 1. The issue is also discussed in Webster (1982).

(81) See Copping (1978).

There is a large body of hagiographic material, especially by American writers. See, for example, American Dietetic Association, (1967), (1968) and the prolific writings of E.N.Todhunter. (See bibliography for examples.) Other historical essays, by nutrition scientists, include: Blaxter (1972), Dam (1966), Gyorgy (1964), (1967), Hollingsworth (1947), Kodicek (1971), Lorenz (1954), Magee (1946), Moore (1965), Widdowson (1969).

(82) For example, the discussion provoked by K.L.Blaxter, and, in particular, J.P.W.Rivers at the symposium on "Strategy for Nutrition Research". (Blaxter (1979), Rivers (1979).)

(83) Webster thought that resolution of the question which he posed (see this thesis 33) was "vitally important" because "...our thinking about the present phase of serious unemployment should not be clouded by a false perspective with respect to its most immediate ancestor and analogue." See Webster (1982), 111.

(84) The Secretary who works at the Nutrition Society office spoke of a great deal of material being disposed of by Miss Copping and also of the most sensitive material being kept in filing cabinets elsewhere. The most obvious deficiency is a paucity of material on some wartime and early post war sub-committees.

(85) see Appendix II.

(86) Ibid.

(87) For a complete list of archives studied and abbreviations used when referring to them in subsequent footnotes, see Appendix I.

FOOTNOTES TO CHAPTER TWO

(01) Paton, Diarmid Noel (1859-1928). For biographical details see Cathcart (1929) and this thesis page 45. For bibliography see Richie (1953) and successive volumes of Glasgow University Institute of Physiology Collected Papers.

Findlay, Leonard (1878-1957) For biographical details see Graham (1957) and this thesis, 46.

Cathcart, Edward Proven, (1877-1954). For biographical details see Wishart (1954), Garry (1954), and this thesis 46 - 7.

(02) For Hopkins see this thesis, Chapter One, footnote 65.

Mellanby, Sir Edward (1884-1955). For biographical details see Dale (1955), Platt (1956), and this thesis, 44 - 5.

(03) See Hopkins (1913), where he explained the scope of "Dynamic Biochemistry". Also Hopkins to Fletcher 9/6/19, MRC PF 106, in which Hopkins speaks of his ambitions for teaching "General Biochemistry".

(04) The Medical Jurist was Sir Thomas Stevenson (1838-1908). See Hopkins (1908). Stevenson appears to have been especially appreciated among professional chemists as a medical man with a sound knowledge of chemistry. (See Russell et al (1977) 171, and the discussion following Hopkins (1906).)

(05) Michael Foster (1836-1907). Career includes: Professor of Physiology, University College, London, 1869 - 70; Praelector of Physiology, Trinity College, Cambridge, 1870 - 83; Professor of Physiology, University of Cambridge, 1883 - 1903; M.P. for London University, 1900 - 06. See Geison, (1978) and Dale (1964).

(06) After Hopkins went to Cambridge his research output was drastically curtailed as the facilities available to him were exceedingly poor, and he was obliged to take lectures and practical classes for the University, and lectures and supervision for Emmanuel College. (See Hopkins (1949) 21 - 2.)

(07) Walter Fletcher (1873-1933). Biographical details: 1891 entered Trinity College, Cambridge, studied physiology. 1897 Fellow Trinity, research in physiology; worked on respiration of muscles - first paper published 1898. 1897 - 1900 took medical qualification, St Bartholemews Hospital, London. 1905 - 14 Tutor, Trinity College. 1913 - 33, Secretary, Medical Research Council. For Obituary see Nature (1933).

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(08) The Chair was created without salary or endowment. See Kohler (1982), 54. This was the second Chair of Biochemistry in Britain, the first being established in Liverpool in 1902 (see Morton (1972)), the first Professor being B. Moore. (For Moore, see British Medical Journal (1922).)

(09) See Hopkins (1949), Baldwin (1972). For the establishment of the Institute of Biochemistry see Kohler (1978).

(10) Mellanby's letter of application for the post of Lecturer in Physiology. QEC Mellanby's personal file.

(11) For a history of the college see Marsh (1986).

(12) The position which Mellanby took up at the London Hospital was Demonstratorship in Pharmacology. QEC Mellanby's personal file, Mellanby to Miss Julius 8/7/13.

(13) See Dale (1955) and Platt (1956).

(14) Paton spent about a year on clinical work in Vienna and Paris. See Cathcart (1929b).

(15) Ibid.

(16) See Findlay (1908), Graham (1957).

(17) Voit, Carl (1831-1908). Pupil of Liebig, and Professor of Physiology, Munich. According to McCollum, Voit's laboratory was "...for a quarter of a century the Mecca of students of metabolism and nutrition.." (McCollum (1957) 18. For Liebig see, for example, *ibid.*, 92 - 98.)

(18) On returning to Glasgow Cathcart utilised Pavlov's techniques for a few years and retained an interest in behaviouristic psychology throughout his life. See Wishart (1954), Cathcart and Dawson (1928), and Cathcart (1928a).

(19) For F.G. Benedict, see Maynard (1969).

(20) See Wishart, (1954).

(21) See Geison (1972), 56 - 7.

(22) Schafer, E.A. (1850-1935). See Marshall (1949).

(23) See Paton (1899a).

(24) See French (1971), footnote 30, page 42.

(25) For Rutherford, see The Lancet (1899a), and British Medical Journal (1899), and for some further indication of

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his relationship with other physiologists, see Sharpey-Shafer (1927) 141.

(26) See Sharpey-Schafer (1927), 14, 92, 93, 119 - 21, 167.

(27) See Geison, (1978).

(28) Hopkins (1913), in Needham and Baldwin (1949), 137.

(29) Ibid.

(30) Ibid., 150.

(31) See Kohler (1973).

(32) Hopkins (1924), 1249.

(33) Paton (1914), 8.

(34) Ibid.

(35) Paton (1926a), 8.

(36) Ibid., 43 - 4. Arising from Paton's view of "protoplasm" was a concept of "hereditary inertia", which was central to his theory of inheritance. This concept was also central to his understanding of endocrinology. See Paton (1913), 1 - 7.

(37) See this thesis, page 22.

(38) Cathcart (1914), 504.

(39) Cathcart (1922b), 747.

(40) Cathcart (1925), 225.

(41) Cathcart (1929a), 652.

(42) Cathcart (1914).

(43) For Benedict see this chapter, footnote 19. For Cathcart's work with Benedict, see Cathcart and Benedict (1912).

(44) See Lusk (1928).

(45) Ibid.

(46) For a typical example of Paton's endocrinological experiments see Paton (1926c) and Paton et al (1916), and for Paton's lectures on endocrinology Paton (1913).

(47) Cathcart (1928b), 22. The rejection of "mechanistic"

approaches occurs consistently in Cathcart's thought. For example, he concluded an essay on "Conditioned Reflexes" as follows:

...the method of conditioned reflexes is... applicable to man, but it is questionable whether it will... offer a full interpretation of cerebral function. As a clean scientific and objective weapon of research it is certainly superior to... some of the older psychological methods, like introspection. But is the old... method as decrepit as those... who uphold the view that consciousness is nothing more than a verbo-gestural mechanism, would like us to believe? The non-mechanistic explanations of consciousness may lack definiteness of outline, but the mechanistic views are barren. (Cathcart (1928a) 74 - 5.)

The anti-mechanistic emphasis is also evident in Cathcart's industrial physiology. Thus in 1927, in a note published in Nature, Cathcart questioned whether it was appropriate to speak of "efficiency" when referring to "fitness to produce", and proposed that instead, the term "effectivity" should be used:

Let the word efficiency be confined, whether fully justified or not, to the ratio of the energy change in the performance of work, but in order to cover the much wider field, where there are no special but innumerable general physiological or physical determinants, and where we wish to speak of enhanced or diminished capacity to perform, it is suggested that a word like effectivity might be more fitly employed. (Cathcart (1927), 599.)

Similarly in the Preface of The Human Factor in Industry, which consisted of lectures which Cathcart had given to engineering students, he remarked:

Despite the rapid increase in automatic machinery we are still fortunately far from the day... when man will be reduced to a mere "machine-tickling aphid". When all is said and done, man is and must always be the variable in every calculation involved in industrial production, and he will remain to the end the most interesting factor in industry, for, whatever may be his faults as a worker, he is a sentient being. (Cathcart (1928c).)

(48) Fletcher and Hopkins (1907) Harris (1949), 58 - 61.

(49) Hopkins (1924), 1249.

(50) Geison (1972), 56 - 7.

(51) Significantly, the leading centre of the English

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physiological renaissance was the school of Michael Foster at Cambridge, where the clinical side of medical education was not catered for. For their practical training, Cambridge students had to go elsewhere. (Geison (1978), 160 - 1.)

(52) Cathcart (1929), xi. Rutherford, despite a lack of success with his colleagues, was a brilliant teacher, well-loved by his students, (see British Medical Journal (1899) and The Lancet (1899a), (1899b)), and Paton appears to have continued this tradition.

(53) Paton (1914). The first edition appeared in 1903, and the other editions in 1905, 1907 and 1920.

(54) Editions of Paton (1908) also appeared in 1911, 1916 and 1918.

(55) Paton (1927), 4. This was Paton's inaugural address as President of the Royal Medical Society of Edinburgh, given in Edinburgh on 14/10/27.

(56) The reference to "book knowledge of the action of frog's heart and muscles" makes Paton's remarks particularly pointed because in the late 1910s Hopkins and Fletcher conducted extensive work on amphibian muscle, which for Hopkins was of great importance in the development of biochemistry. (See footnote 48.)

(57) Hopkins (1949), 21 - 22.

(58) Ibid.

(59) Hopkins to Fletcher 9/6/19, MRC PF 106.

(60) Mellanby to Fletcher 14/12/20, MRC 99/6I.

(61) Thomson (1973), 15.

(62) Ibid., 30. Fletcher had probably earlier been responsible for Hopkins's appointment to the Praelectorship at Trinity College. (See Dale (1948), 134.)

(63) Thomson (1973), 26.

(64) Quoted by Platt (1956), 17 - 18.

(65) Dale (1955), 201.

(66) Fourth MRC Annual Report 1917-18, 77. For the Lister Institute see Chick et al (1971), Drury (1948), Miles (1966).

(67) Fletcher to Hardy 20/4/20, MRC File 204 AFFC Vol I.

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(68) Ibid.

(69) Ibid., and Fletcher to Hopkins 21/4/20, MRC File 204 AFFC Vol I. Fletcher was particularly anxious about the Food Information Board encroaching upon the MRC's territory. For the Food Information Board see Hutchinson (1972). He also, in the early days of the Ministry of Health, sought to make it clear that basic research into vitamins was the responsibility of the Medical Research Committee, rather than the Ministry's Food Department. ("Memorandum on the suggested relations between the Ministry of Health and the Medical Research Committee in regard to scientific work on food", W.M.Fletcher 25/11/19. MRC File 1500, "Ministry of Health Food Department 1919 - 35.")

(70) Fourth MRC Annual Report, 1917-18.

(71) Fifth MRC Annual Report, 1918-19 50 - 51.

(72) Paton and Findlay (1926).

(73) See Petty (1985).

(74) The membership of the Child Life Committee was as follows:

Paton, Chairman.

J.W. Ballantyre, MD Ed 1889. Physician, Royal Maternity Hospital, Edinburgh (in charge of Antenatal Department); Lecturer in Midwifery and Gynaecology, University of Edinburgh. Obstetric physician and gynaecologist in private practice.

John Brownlee, MD Glas 1897, DPH Camb 1898. Former Research Physician and Surgeon, Victoria Infirmary Glasgow. Director of Medical Statistics, Medical Research Committee.

A.K. Chalmers, MD Glas 1887. Medical Officer of Health, Glasgow.

Leonard Findlay.

Eardley Holland, MD Lond 1907. Gynaecologist to London Hospital and Lecturer in London Hospital Medical School.

Sir Leslie Mackenzie, (1862-1935). Medical Officer of Health, Leith, 1894 - 1901; Medical Member, Local Government Board for Scotland, 1904 - 19; Medical Member, Scottish Board of Health, 1919 - 28.

G.F. Still, MD Camb 1896. Professor of Diseases of Children, King's College Hospital.

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Jean Agnew, MD, Paton's assistant.

(Information from Fifth Annual Report of the Medical Research Committee 1918-19, The Medical Directory and Who's Who. For Still, see also Sheldon (1957).)

(75) The membership of the Accessory Food Factors Committee was as follows:

F.G. Hopkins, Chairman.

Harriette Chick, (1875-1977). Education includes: University College, London, University of Vienna. Career includes: Scientific staff, Lister Institute, 1905 - 46. (See Copping (1978b).)

J.C.Drummond, (1891 - 1952). BSc Chemistry 1912, Research at King's College, London, 1912 - 14, and at Cancer Hospital, London 1914 - 19. Research Assistant, 1919 - 20, Reader in Physiological Chemistry 1919 - 20, and Professor of Biochemistry 1922 - 45, University College London. Scientific Adviser, Ministry of Food 1940 - 46. Director of Research, Boots Pure Drug Company, 1946 - 52. (See Young (1954) and Copping (1964).)

Arthur Harden (1865-1940). BSc Chemistry, Manchester, 1885. Scientific staff, Lister Institute, 1897 - 1930. (See Hopkins and Martin (1942).)

E. Mellanby.

(List of members of Accessory Food Factors Committee from Fourth Annual Report of the Medical Research Committee 1917-18.)

(76) Paton (1928), 10. See also Paton (1926b) for further evidence of his views of the relationship between physiology and medicine.

(77) Hopkins (1924), 1252.

(78) In an address on "The Future of Medical Practice from the Point of View of Medical Research" given to the Section of Medical Sociology of the 1920 Annual Meeting of the BMA, Hopkins said that there was a "need... to urge that the laboratory should function much more than it has hitherto done in actual practice, and to claim that the practitioner should look upon the medically qualified laboratory worker not as one belonging to a different calling but as a colleague." See Hopkins (1920a), 41. A further source for Hopkins's views on the relationship between laboratory workers and clinicians in Hopkins (1931a).

(79) Findlay (1922a), 826.

(80) The rickets controversy is discussed in detail in section 2.6. of this Chapter.

(81) The initiators of moves to establish the Chair of Pharmacology at Sheffield had Mellanby in mind at the earliest stages of its creation. (EM Bleather, Sheffield University to Mellanby 2/3/19.) Mellanby was able to choose this appointment from among other possibilities. (EM Mellanby to Sir Henry, University of Manchester 2/4/20.); Mellanby found the position at Sheffield attractive because it offered facilities for both laboratory and clinical research. Presumably, Mellanby's work on alcohol for the Liquor Control Board, which he conducted concurrently with the work on rickets, made it easier for Mellanby and his allies at Sheffield to justify his appointment to a Chair of Pharmacology. (See Mellanby 1919a.)

(82) Mellanby introduced his book, Nutrition and Disease - The Inter-action of Clinical and Experimental Work (1934), as follows:

There is undoubtedly a widespread interest in medical research to-day... It is realised that research must form the basis, not only for the proper treatment, but also far more important, for the prevention of disease. It is not suprising, however, that much discussion has arisen as to what is the best method for making big advances in our knowledge of the subject and the facilities that can be most profitably supplied to the investigators...

During the past thirteen years, I have had the opportunity, as a professor of pharmacology and a physician of a large general hospital, of making investigations in medical problems which have allowed combined laboratory and clinical facilities, and the present occasion seemed to offer a chance, by reviewing the work done, of showing how the two methods can react on one another to their mutual advantage... (Mellanby (1934), xv. Similar comments appear in Mellanby (1933b).)

The acquisition of clinical facilities in 1920 strengthened Mellanby's hand in the rickets controversy. (See this thesis, page 77.) He was also soon prepared to enter the fray with clinicians on other matters. For example, in an article in the British Medical Journal in 1924 he claimed that the occurrence of dyspepsia in children was "greatly exaggerated" and poured scorn on the established practice of treating it with a low fat diet. (See Mellanby (1924), 899.) In particular he attacked the views of the German paediatricians Czerny and Finkelstein. (See Schiff (1957) and Rosenstein (1957).) He was swiftly rebuffed by a clinician in the letters pages for his disrespectful remarks. H. Charles Cameron, Physician in

Charge of the Department of the Diseases of Children, Guy's Hospital remarked:

Professor Edward Mellanby has undoubtedly done great work in his laboratory investigations into the etiology of rickets. More recently he has become a clinician, so recently indeed that the disappointments of practice have not yet deprived him of that self-confidence which the successful control of laboratory work rightly engenders. For the futilities of his predecessors in this field he has nothing but contempt... nothing servicable has been taught or learnt, and dietetic prescriptions have as a rule been well calculated to aggravate the very mischief which they were designed to cure. (Cameron (1924).)

But while Mellanby was prepared to use his clinical work in order to compete with clinicians on their own terms, events surrounding the appointment of Howard Florey to the Chair of Pathology at Sheffield in 1932 show that his primary allegiance was very definitely with research rather than clinical experience. Florey was not recognised as a pathologist by his peers but he had a distinguished record in experimental research. He was medically qualified, but had never dissected a human body, and would be unable to run an autopsy service for his clinical colleagues. To the anger of practicing pathologists and many members of the medical faculty, Florey was chosen for the Chair from a distinguished shortlist. Mellanby and J.B. Leathes, pioneer biochemist at Sheffield (see Peters, (1958)), were widely regarded as having been responsible for getting Florey the job. Mellanby and Leathes were not bothered by Florey being unable to perform the traditional service role of the Professor of Pathology. From their point of view, it was only his research record which mattered. (See also Macfarlane (1979) 206 - 8. Also Ibid., 236 - 7, on Mellanby's support for Florey when Florey was elected to the Chair of Pathology at Oxford in 1935.)

(83) See Paton (1898) and Paton et al (1900).

(84) See Cathcart (1929), x.

(85) These were: Professor Bretland Farmer of Imperial College; W.B. Hardy, acting secretary of the Royal Society; and W.M. Bayliss, Professor of Physiology, University College London. See Hutchinson (1972).

(86) For the origins and early work of the Department of Scientific and Industrial Research see Rose and Rose (1969) 37 - 46, and MacLeod and Andrews (1970).

(87) Hopkins became a member of the Fish and Meat Preservation Committees, and he undertook work for the Board on the biochemical changes of muscle after death. He

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became a member of the Advisory Council of the Low Temperature Research Station. (See Hutchinson (1972) 28, 35, and Department of Scientific and Industrial Research (1919).)

(88) Wishart (1954), 47. Cathcart's only involvement with the provision of texts for medical students was when he contributed a chapter to Cathcart and Paton (1915), and to Cathcart, Paton and Pembrey (1929), published shortly after Paton's death. He did not produce any further editions of these, or of Paton's other textbooks.

(89) There is a little evidence of a purposeful neglect of clinical matters. For example, at the Section on Physiology at the 1922 Annual Meeting of the British Medical Association, when Cathcart opened a discussion on "Basal Metabolism", he stated his intention "to deal with some of the physiological phenomena associated with the consumption of oxygen and leave to others the clinical aspects." (Cathcart (1922), 747.)

(90) See Wishart (1954), 37.

(91) Cathcart (1918) and Cathcart and Orr (1919).

(92) Between 1918 and 1923 Cathcart was the author or joint author of a total of seven publications arising directly from his involvement with the military. (See, for example, Cathcart and Stevenson (1922).) In contrast with Cathcart's acknowledged patriotism, Mellanby was suspected, during the First World War of holding "advanced pacifist views", and Fletcher had to defend him against the suggestion that he "...ought to be called upon to do something more active in the way of patriotic work than research and teaching." After Fletcher's intervention, Mellanby's exemption from military service, which was first obtained on his behalf by the Liquor Control Board, was continued. (See R.W. Johnstone, Deputy Commissioner of Medical Services to Fletcher 12/3/18, Fletcher to Chief Commissioner of Medical Services 26/3/18, Johnstone to Fletcher 30/3/18. MRC 99/IA.)

(93) The "Industrial Fatigue Research Board" had its origins in the "Health of Munition Workers Committee" of the Ministry of Munitions of War, which was established soon after the outbreak of the war, and which was aided by the Medical Research Committee. (First Annual Report of the MRC, 1915, 44, Second Annual Report of the MRC, 1915-16, 67.) The Health of Munition Workers Committee was transformed into the "Industrial Fatigue Research Board" (later Industrial Health Research Board) at the end of the war as a joint organisation of the Department of Scientific and Industrial Research and the MRC (Fourth Annual report of the MRC 1917-18, 67.) Cathcart contributed to four

reports of the Board between 1924 and 1935. (See Cathcart's bibliography in Wishart (1954), 51 - 2.) His first and major contribution was The Physique of Women in Industry, published in 1928. (See Cathcart et al (1928).)

(94) These are Cathcart, Paton and Greenwood (1924), Cathcart and Murray, (1931), (1932), (1936), and Cathcart, Murray and Beveridge (1940).

(95) These lectures were published as Cathcart (1928c).

(96) In the following footnote, which gives an account of Cathcart's involvement with the Glasgow and West of Scotland College of Domestic Science, (GWSCDS) the references are to Minutes of meetings recorded in the Governors' Meetings Minute Books. (see Appendix I.)

Cathcart was elected a Member and Governor of the College of Domestic Science in May 1925. (Governors meeting 8/5/25.) According to Calder (1968), Cathcart helped in the development of the dietetics course at the College. Cathcart's involvement in the College certainly came at the time of the setting up of the course. A dietetics course was first suggested in late 1924, after the Principal had received enquiries from members of the public, following the establishment of a course at King's College of Household and Social Science in London. (Committee on Cookery 19/11/24. The course referred to in London was probably the BSc Household and Social Science, established in 1920, which contained a component of nutrition taught by V.H.Mottram. See Marsh (1986). For some general history of the training of dieticians, see Hutchinson (1961).) Miss Mary Andross, a Glasgow Chemistry graduate, who had conducted postgraduate work under the Professor of Chemistry at the Royal Technical College, (who was also a Governor of the GWSCDS) had just been appointed head of the science department of GWSCDS, and also played an important role in the development of the dietetics course. (Calder (1968).) Upon election as a Governor of the College, Cathcart became a member of the Cookery, Housewifery, and Educational Methods Sub-Committees. He attended few Sub-Committee Meetings however, and no Governors' Meetings after 1929. In 1934 when he was due to retire as a Governor, he offered his resignation because he said he had been unable to attend meetings due to lack of time, but he was persuaded to continue. (Governors' Meeting 12/1/34.) In 1943 however, when he offered his resignation for the same reason, it was accepted. (Governors' Meeting 24/6/43.) But throughout this time, Cathcart retained an interest in the College. For example, he wrote to a Governors' Meeting in November 1931 about the proposed staff wage cuts. (Governors' Meeting 6/11/31.) In 1934 he took part in moves to establish the domestic science course as a science degree. (Governors' Meeting 21/12/34.) In the same year he wrote a foreword to a booklet on cheap diets which was

written by Miss Andross and another lecturer at the College. In 1935 Miss Andross wrote a paper on metabolism, and Cathcart asked the Sub-Committee on Science if it could be included in a report which he was preparing. (Sub-Committee on Science 5/2/35.) In 1936 a graduate in dietetics from the College started research on nutrition under Cathcart. (AGM 16/12/36.) In 1939 Cathcart wrote a foreword to a pamphlet on Economic Budgeting for the Family with Menus and Recipes which was written by one of the science lecturers of the College. (Sub-Committee on Science 14/12/39.)

The dietetics course, started in 1925 was poorly subscribed until 1930. In 1927 Cathcart arranged a series of advanced lectures on dietetics for the staff of the College. Cathcart's wife, who was medically qualified, became examiner for the course and continued in this role until 1935, when Dr. D.P.Cuthbertson, a member of Cathcart's staff, took over. (Educational Methods Committee 11/11/35.) Mrs George Wishart, the wife of another of Cathcart's colleagues became a member of the Housewifery Committee in 1942, and in 1947, R.C.Garry, Cathcart's successor, became a Governor and member of the Housewifery, Educational Methods, Cookery and Science Sub-Committees (AGM 19/12/47). Garry's wife became a member of the College and the Technical Sub-Committee in 1963. (AGM 23/5/63.) Links between the Physiology Department and the College continued then, long after Cathcart had retired.

(For a history of GWSCDS see Miller (1975). For general works on the history of Domestic Science see Bayliss (1975), Sillitoe (1933) and Yoxall (1975).)

(97) See Findlay (1922a), and (1909). Also British Medical Association Science Committee (1906), (1907), (1908), (1909). Findlay received a grant from the BMA towards the cost of this work.

(98) Findlay (1908), 17. Note that that dietetic theories of rickets had long been in existence, (see Drummond et al (1957)), and that Findlay began his argument against such theories long before Mellanby claimed to have produced evidence for the vitamin deficiency theory.

Findlay's theory met with little enthusiasm, although his paper generated a considerable amount of correspondence in the British Medical Journal. Several correspondents suggested that the cause of rickets in the experiments had been lack of fresh air rather than lack of exercise, and there was one criticism of the diets which Findlay had used. (BMJ (1908) II 117, 290, 358, 441, 533, 628.)

A few months later, when Findlay read a paper on rickets to the Glasgow Medico-Chirurgical Society, it was reported that a "majority of speakers considered Dr. Findlay hardly warranted in his conclusion." (British Medical Journal (1908) 2 1372.)

(99) See First Annual Report of the MRC, 1914-15, 25 - 26 for an outline of work on rickets in progress at Glasgow and elsewhere before the war, and Second Annual Report of the MRC, 1915-16, 19 - 20 for an indication of the effect of the outbreak of the war.

(100) Hopkins drew up the scheme for rickets research with Lord Moulton, which was based on a review of knowledge by Hopkins. (This is included in a note by Walter Fletcher on the history of the MRC rickets research, which was added to a memorandum on rickets research by Paton, dated 7/11/21. MRC File 99A.)

(101) "Professor Noel Paton's Memorandum upon Rickets" - a reply by Hopkins dated 15/11/21. MRC 99A. In this extract, Hopkins is referring to the survey of working class diets in Glasgow, which Paton supervised. (See Lindsay (1913) and British Medical Journal (1913).)

(102) See First Annual Report of the MRC, 1914-15, 25.

(103) Professor Robert Muir (1864-1959): see Scottish Medical Journal (1959). Although Muir was formally jointly in charge of the work, it seems to have been supervised by Paton with Findlay, rather than Muir.

Most of the endocrinological work was published as a collection of papers in the Quarterly Journal of Experimental Physiology in 1916. See Paton et al (1916). This work was funded initially by the Carnegie Trust before being taken over by the MRC, and the Carnegie Trust also assisted with the cost of publication. This work won the "Warren Triennial Prize of the Massachusetts General Hospital" for 1916, but it was unproductive in the sense that it did not contribute directly to the theory with which the Glasgow Group opposed Mellanby. This was based on the social, dietary and clinical investigations, feeding experiments, and experiments on the effect of confinement on dogs.

(104) Findlay (1915).

(105) Fletcher to Mellanby 31/7/14, MRC 99/6I.

(106) Mellanby to Fletcher 29/9/14, MRC 99/6I. The First Annual Report of the MRC 1914-15 described Mellanby's work as "....a study of experimental rickets and its relations to conditions of oxidation."

(107) Mellanby to Fletcher 19/12/14 MRC 99/6I.

(108) Mellanby to Fletcher 2/7/15, Miss Lane Claypon (Dean of Kings College for Women) to Fletcher 10/10/16, Fletcher to Claypon 17/10/16. MRC 99/6I.

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(109) Fletcher to Stanley Griffiths, Cambridge University Field Laboratories, 8/5/17, Griffiths to Fletcher 9/5/17, Fletcher to Mellanby 11/5/17, Mellanby to Fletcher 18/5/17 MRC 99/61. Mellanby was under pressure from the College to find accomodation elsewhere for his dogs due to complaints about the barking from nearby residents. Assistant Secretary (to Lane Claypon) to Mellanby 11/9/16 QEC Mellanby's Personal File.

(110) Third Annual Report of the MRC 1916-17.

(111) This was not the first clash between Mellanby and the Glasgow group. During the late 1910s they had crossed swords over the role of creatine metabolism in birds. In this controversy Paton attacked Mellanby along lines similar to those which he sometimes followed later during the rickets controversy - Mellanby had, according to Paton, committed gross irresponsibility by failing to provide sufficient evidence for the views that he propounded. (Mellanby (1908), Paton (1910), Paton and Mackie, (1912).)

Although there is no evidence of any direct clashes between Paton and Hopkins before the rickets controversy, Paton had engaged, in the 1890s, in a controversy with F.W.Pavy, Hopkins's colleague and mentor. (See Hopkins (1912a) and Kohler (1982), 49.) When Paton attacked Pavy's argument against the accepted view of the liver as a glycogenic (glycogen-making) organ, Pavy wrote a whole book in reply. (Paton (1894a) 233, (1894b), (1897), (1899b), Pavy (1894), (1895).)

(112) Mellanby (1918a), xii. Dale (1955), 201, presents Mellanby's discovery of the presence of a vitamin-deficiency in rickets as if it were a complete surprise and suggests that, at the outset of the work, although Hopkins suspected that rickets was a vitamin deficiency, he did not communicate this view to Mellanby. This seems rather unlikely in view of the fact that Hopkins had referred to rickets in his early formulation of the vitamin concept in 1906, (see Hopkins (1906)), and Funk (the originator of the word "vitamine") had referred to rickets as a vitamin-deficiency in 1912. (Funk (1912).) In addition in the First Annual Report of the MRC 1914-15, under the heading "Determination of Growth Factors with Specific Reference to Rickets", Hopkins was said to be studying "...the unknown but recognisable factors in the diet, determining growth without apparent relation to energy supply."

(113) Ferguson (1918), 93 - 4.

(114) Paton and Findlay (1918), 98.

(115) Paton and Findlay to Fletcher 12/8/18, Fletcher to Hopkins 29/7/18, Fletcher to Hopkins 17/8/18, MRC 99/1.

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(116) Fletcher to Hopkins, 17/8/18 MRC 99/1.

(117) Mellanby (1918b).

(118) Paton, Findlay and Watson (1918), 625. This paper was based on experience gained during a series of endocrinological experiments carried out in Paton's department by J.M.Renton and M.E.Robertson. (See Renton and Robertson (1916).)

(119) Medical Research Committee (1919a). Later in the year the Medical Research Committee published a "Report on the Present State of Knowledge concerning Accessory Food Factors (Vitamines)", which was produced by the Accessory Food Factors Committee. The section on rickets was drafted by Mellanby, (MRC AFFC Minutes 20/6/18), and included a critique of the design of Findlay's original experiments. (Findlay, (1908), and Medical Research Committee (1919b) 87.)

(120) Hariette Chick: see footnote 75.

(121) Fletcher to Hopkins 6/6/19, MRC PF 106.

(122) MRC File 204 AFFC Vol I.

(123) MRC AFFC Minutes, 28/7/19.

(124) Pirquet, Clemens Friherr von, (1874-1929). Career includes: Professor of Paediatrics, John Hopkins University, Baltimore, 1908 - 10; University of Breslau 1910 - 11; Professor of Paediatrics, University of Vienna, 1911 - 29; General Commissioner of the American Relief Administration for Austria's Children, 1919 - 23. Committed suicide. (WW and Schick (1957), 256 - 7.)

(125) Mellanby (1920a), 71.

(126) Paton (1920), 77.

(127) This refers to the AFFC's Monograph on Vitamins. (See MRC (1919b).) Mellanby contributed the section on rickets. (MRC AFFC Minutes, 20/6/18.)

(128) Mellanby (1920a), 96.

(129) "Memorandum on Rickets Investigations" by Paton 15/3/20. MRC 99A.

(130) Fletcher to Paton 22/4/20. MRC 99.

(131) The Sixth Annual Report of the MRC explained this move by pointing out that rickets had been studied from two convergent directions - "...one set of investigations has

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treated it as a disease of childhood, to be studied in its results by all available laboratory and clinical methods, and its causation sought by epidemiological and social enquiry; the other has followed the line of direct experimental study of the rickety condition as it occurs in young dogs or other animals deprived of 'accessory food factors' or 'vitamins'." For these reasons, the Report continued, both the Child Life Committee and the AFFC were interested in the problem, and therefore for "...the due concentration upon this problem of both modes of study the Council have found it convenient to appoint a small Committee upon Rickets of representatives of both sets of researchers..." (Page 61).

(132) The initial membership of the Rickets Committee was as follows: Findlay, Hopkins, Mellanby, Paton and Professor H.S.Raper.

Raper, H.S. Education includes: University of Leeds, MB, ChB 1910. Career includes: Lecturer in Physiology and Biochemistry, University of Leeds, 1913 - 23; Professor of Physiology, University of Manchester, 1923 - 46. (WW)

(133) Paton to Bond 12/5/20, MRC 99A.

(134) Hopkins (1920b), 147.

(135) Robert Hutchison (1871-1960). Career details, (in chronological order): MB CM Ed 1893, MD, MRCPed 1896, House Physician Hospital for Sick Children, and House Surgeon Royal Maternity Hospital, Edinburgh. Demonstrator of Chemical Physiology, House Physician, Assistant Physician, Physician and Consulting Physician, Hospital for Sick Children, Great Ormond Street, London. Also Demonstrator of Physiology, Assistant Physician, Physician, London Hospital, until resignation in 1933. President Royal Society of Medicine, 1934, President Royal College Physicians, London 1938-41. (WW) Hutchison was a recognized medical authority on dietetics, having been Medical Adviser to the Ministry of Food in the Great War, and having published a highly successful textbook entitled Food and the Principles of Dietetics in 1900. This book went through twelve editions, the latest as Hutchison's Food and the Principles of Nutrition (note the amended title), by Sinclair and Hollingsworth in 1969. See also footnote 194, and Chapter Three, footnote 334, and Tallerman and Maitland-Jones (1951), Porter (1951), Hunter (1951) and Franklin (1951).

(136) See Hutchison (1920).

(137) Hopkins (1920b), 147.

(138) Sir James Barr (1849-1938). Education includes:

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Glasgow University. Career includes: Consulting Physician, Liverpool Royal Infirmary. Barr was, according to his British Medical Journal obituary, an extreme political conservative and "...for many years... an outstanding leader of militant medicine." This was in reference, in particular, to Barr's vocal and much publicised opposition to the Insurance Act of 1911 which he regarded as a "long step in the downward path towards socialism". He was also a supporter and vice-president of the Eugenics Education Society. See British Medical Journal (1912) and (1938).

(139) See Barr (1920), 150 - 1.

(140) For an outline of Rubner's work, see Chambers (1952).

(141) Hopkins (1921), 2.

(142) See *ibid.*, 3, von Pirquet (1922), Faber (1920), (1923).

(143) *Ibid.*, 1.

(144) *Ibid.*, 7.

(145) *Ibid.*

(146) *Ibid.*

(147) See, for example, Findlay (1922a), 828, and Paton (1920), 85.

(148) A. Lansborough Thomson (Fletcher's assistant) to Mellanby, 8/11/20. MRC 99/6I.

(149) Mellanby to Fletcher, 9/2/21. MRC 99/6I.

(150) Jean Agnew (Paton's assistant) to Fletcher 26/3/21. MRC 99/6I.

(151) Paton and Watson (1921b), 594.

(152) Findlay (1921).

(153) Paton to Fletcher 12/5/21.

(154) See Mellanby and Mellanby (1921).

(155) Paton to Fletcher 8/6/21, MRC 99/6I.

(156) Fletcher to Paton 4/7/21, MRC 99/6I.

(157) "Memorandum upon investigations upon rickets" by D.Noel Paton, MRC 99A. Paton mentioned, in particular remarks about the Medical Research Council in Hess and

Unger (1921).

(158) Ferguson (1918). Paton and Findlay, in their concluding chapter to the report, remarked: "Whatever be the essential nature of rickets we feel warranted in drawing the conclusions that by improving... housing conditions the disappearance of the disease would be brought about... (Paton and Findlay (1918), 99).

(159) "Professor Noel Paton's Memorandum upon Rickets" - a reply by Hopkins dated 15/11/21. MRC 99A.

(160) The members added were John Boyd Orr (see this thesis 170 - 2) and Professor Halliburton, Professor of Physiology, Kings College, London, who became chairman. Halliburton was probably thought to be a good go-between because he had previously collaborated, in connection with the work of the Royal Society Food (War) Committee both with Paton, and with Drummond who was a leading vitamin researcher, and a member of the Accessory Food Factors Committee. (See McDowall (1949), Young (1954), 102, and Halliburton and Paton (1919).)

(161) Mellanby (1921), 75.

(162) The "newer knowledge of nutrition" was a phrase coined by the American E.V. McCollum as the title of his book. See McCollum (1918).

(163) Findlay (1922a), 825.

(164) Hess and Unger (1920).

(165) See footnote 124.

(166) Findlay (1922a), 828. See Hutchison and Shah (1922).

(167) Findlay (1922a), 830.

(168) Findlay (1922b), 846.

(169) As evidence of the prophylactic power of cod liver oil Findlay referred to trials by Hess and Unger (1917), and also to trials carried out by his own group.

(170) This refers to Mackay (1920)

(171) Hess and Unger (1920).

(172) Findlay (1922b), 847.

(173) Ibid. In this quotation, Findlay is referring to Medical Research Committee (1919b) and Mellanby (1922a).

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(174) Findlay (1922b), 849.

(175) Mellanby (1922b), 850.

(176) Paton referred to Medical Research Committee (1919a), and Mellanby (1921), 18.

(177) Paton (1922), 854.

(178) Ibid., 855.

(179) "Reply to Paton's Hatchet letter." 28/8/22. EM.

(180) H. Corry Mann, MD London 1906. Career includes: Medical Registrar, Tutor and Assistant Demonstrator of Pathology, Guy's Hospital; Consulting Physician Evelina Hospital for Sick Children and St Johns Hospital Lewisham. (Med Dir.)

(181) Corry Mann (1922), 6 - 7.

(182) Ibid., 83.

(183) Korenchevski, V. was formerly Professor of Experimental Pathology in the Military Academy at Petrograd, and since coming to Britain had worked in the Department of Experimental Pathology of the Lister Institute. (See Korenchevski (1922), 3.)

(184) Ibid., 112.

(185) Rickets Committee 13/1/23 MRC 99A.

(186) Accessory Food Factors Committee (1923), 5.

(187) Huldchinsky (1919).

(188) In Findlay's discussion he suggested several ways in which the work on ultra-violet light could be incorporated into his own theories: "That sunlight has a curative effect I am quite satisfied, but that does not necessarily mean that its absence is the cause of the disease. Sunlight, at least in moderation, exhilarates; and may it not be that its absence induces lethargy and thus leads to deficient exercise? Does sunlight exert its curative influence because a deficiency has been made good, by stimulating metabolism, or is it because of its antimicrobial powers on some infecting agent?" (Findlay (1922b), 849.)

Mellanby suggested: "Since these rays have very little penetrating power it is probable that their action is on the skin, and that some powerful chemical substance is thereby liberated... it seems possible that the fat-soluble vitamin is the substance liberated into the circulation by the action of the ultra-violet rays on the skin." Mellanby

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(1922b), 852.

(189) Accessory Food Factors Committee (1923), 200.

(190) Hopkins (1923a), 691.

(191) Hopkins (1923b), 748.

(192) Ibid., 750.

(193) Hutchison: see footnote 135. For Rainy, see Edinburgh Medical Journal (1923).

(194) From Clinical Methods, Hutchison and Rainy, (1897), 22. This textbook was highly successful. Rainy's obituary recorded in 1923: "The book has gone through seven editions, over 40,000 copies have been sold, and it is still the most popular book of its kind. (See Edinburgh Medical Journal (1923), 70.) Clinical Methods has now been through eighteen editions, the later editions being by Hutchison alone, and then by other authors. The latest edition, (1984) lists "State of nutrition, obesity, oedema", as the sixth item to be considered in physical examinations, immediately after "Build". There is no discussion of what "state of nutrition" entails, but "malnutrition" and "obesity" are mentioned later under the heading "Physique". (See Swash and Mason (1984), 20, 26 - 7.)

Note that this is the same Robert Hutchison that condemned the vitamin theory as the latest "dietetic stunt" in 1920. (See this thesis, page 69.)

(195) Newman, George (1870-1948). Education includes: King's College, London; Edinburgh University; Medical Qualification 1892, MD 1895, DPH Camb 1895. Career includes: Demonstrator of Comparative Pathology and Bacteriology, Kings College, and Lecturer in Public Health, St. Barts. Medical College, 1896; County Medical Officer, Bedfordshire, 1897; Medical Officer of Health, Finsbury, 1900; Chief Medical Officer, Board of Education, 1907 - 35; Chief Medical Officer, Ministry of Health, 1919 - 35. (WW)

(196) Board of Education (1910), 42. For the four categories see Board of Education (1908).

(197) Board of Education (1910), 43.

(198) Paton and Findlay (1926), 50.

(199) See Ibid., 51 - 57.

(200) Ibid., 59.

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(201) Newman (1910), 43.

(202) Paton and Findlay (1926), 59.

(203) Cathcart et al (1924), 34.

(204) For Cathcart's use of the clinical concept, see this thesis, page 173. When Mellanby spoke about "state of nutrition", it was to point out the inadequacies of clinical assessment, and to look forward to the development of "...new standards with new instruments of precision [which] will become of greater importance..." in determining malnutrition. (See Mellanby (1934), 75.)

(205) Cathcart and Paton (1911), 920.

(206) Ibid.

(207) Cathcart (1929a), 648.

(208) This is from Cathcart's section on "Chemical Physiology" in Cathcart et al (1929b), 233. In this book Cathcart also spoke of "ferments" (page 271), a term which, according to Kohler had long been replaced by "enzymes" as chemical physiology was displaced by biochemistry. (Kohler (1973).)

(209) Greenwood, Major (note that this is his first name, not a military rank) (1880-1949). Career includes: Demonstrator of Physiology, London Hospital Medical College, 1905-10; Statistician to the Lister Institute 1910-19; Captain RAMC (TF), in charge of the medical Research Subsection of the Ministry of Munitions 1917-19; Medical Officer, Ministry of Health 1919-27; Professor of Epidemiology and Medical Statistics, London School of Hygiene and Tropical Medicine 1927; Hon Sec Royal Statistical Soc 1919-34, President 1934-36. See Hogben (1950). For Greenwood's wartime dietary studies see Greenwood and Dunlace (1918), and Greenwood and Thompson (1918). For some comments about Greenwood's early involvement with eugenics, and his shift away from eugenics which accompanied his move to the Lister, and increasing interest in nutrition, see MacKenzie (1981), 111.

(210) Greenwood to Fletcher 30/10/21, MRC 21001. Greenwood told Fletcher that he was approaching him rather than the Chief Medical Officer of the Ministry of Health (George Newman) about forming a Committee, because he thought that Newman would regard the proposal as a "stunt". For some further details of the foundation of the Committee on Quantitative Problems in Human Nutrition, see Petty (1985).

(211) For a brief explanation of "proximate analysis of foodstuffs" see McDonald et al (1972), 3 - 5.

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(212) See this thesis, page 70.

(213) Cathcart (1922a), 752.

(214) See, for example the section on vitamins in Cathcart (1928d). Also Cathcart (1923b).

(215) Cathcart (1921), 88.

(216) Cathcart (1928), 39.

(217) Cathcart and Murray (1931), 3.

(218) Cathcart (1931b), 132.

(219) Ibid., 133. The emphasis on vitamins, and a dismissive attitude to calories, was typical of Mellanby. For example in an address given in 1929, he referred to the facts that the body requires sufficient energy and protein in the diet as "truisms" before going on to discuss the role of vitamins in nutrition. (See Mellanby (1930), 677.)

(220) Cathcart (1931c), 6. In view of Cathcart's opposition to reductionistic approaches to the chemistry of life, and his arguments against emphasis on vitamins, which we have seen in the last few quotations, there may be an interesting story behind some remarks of one of my interviewees, who had worked in the physiology department at Glasgow during the 1930s. This interviewee had originally graduated in chemistry, and during his final year his interest in physiological chemistry was aroused when he attended a lecture on vitamins by Professor Andrew Hunter, who had become Cathcart's successor as Professor of Physiological Chemistry, after Cathcart had succeeded Paton. (Note that when Cathcart held the chair, it was entitled "Chemical Physiology".) Hunter was an enzymologist, his interest being in arginase, and according to my interviewee, after a few years he moved to a Chair in Canada, because he had "never been very pleased with things in Glasgow." Hunter was replaced by G.M.Wishart, former assistant to Paton, who shared Cathcart's "whole-body" approach. Wishart's obituary recorded that "...he worked on some chemical aspects of metabolism but his real love was indirect calorimetry of human beings." (See British Medical Journal (1958), and for Hunter Who was Who VI.)

(221) See this thesis, page 102.

(222) Cathcart (1931a), 178.

(223) Cathcart (1931c), 7.

(224) See League of Nations (1932a).

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(225) See Cathcart and Murray (1932), 5 - 6.

(226) Cathcart to Thomson 8/12/33, MRC 2100/1 Vol 4 (1932-36).

(227) Paton et al (1900).

(228) Lindsay (1913).

(229) This Committee was a Sub-Committee of the Physiological War Committee of the Royal Society, which was established soon after the outbreak of war to advise the Government on matters concerning physiology. The Food (War) Committee was set up in 1915. A.D. Waller, FRS, Professor of Physiology of the University of London was the first Chairman, and E.H. Starling, Professor of Physiology, University College, London became Chairman later; both Paton and Hopkins were among the nine members. The Committee engaged in agitation for scientific food policies and was eventually heeded by the Second Food Controller, Lord Rhondda, in 1917. Starling subsequently became Scientific Advisor to the Ministry of Food. (See Royal Society (1917), (1919), British Medical Journal (1919), The Lancet (1919), Starling (1919a), (1919b), Beveridge (1928). Also Cathcart (1923a) and Hamill (1923). For Starling see Barcroft (1937).)

(230) At the end of the war a memorandum from the Food (War) Committee was transmitted, by the Council of the Royal Society to the Development Commission, the MRC, and DSIR, which expressed the view that

...the science of nutrition from the national standpoint has been insufficiently studied, and that an urgent need exists for a central institute or organisation, supported by Government funds, to promote and direct nutritional investigations throughout the country, into the connected problems of human and animal nutrition, and the utilisation of agricultural products so as best to serve the national health and economy. (Fifth MRC Annual Report, 1918-19, 54.)

In March 1919, a conference of the Development Commission, the DSIR Advisory Council, and the MRC discussed the establishment of a "Human Nutrition Research Board", and a Provisional Committee was established to "...consider and report upon the exact nature of the work such a Board should undertake". (Ibid.) Starling was appointed convenor of the Provisional Committee and Paton and Hopkins were among its seven members. After a meeting in July 1919, Major Greenwood (see this thesis footnote 209), was asked to prepare a memorandum based on minutes, notes and written instructions from Starling. This memorandum, which was circulated to the members of the Committee proposed a

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Central Authority charged with the duty of providing a complete survey of the position, able to further by expert advice and pecuniary assistance to such enquiries as are in progress... and finally to make suggestions as to what form a State Department of Human Nutrition might take. (Starling to Fletcher 1/8/19 MRC 209/2.)

However Greenwood also told Starling that he didn't really agree with the memorandum which he characterised as a proposal for a "...semi-detached method of state-research." Greenwood thought that the "scientific pundits" associated with the scheme would not "put their backs into the work". (Greenwood to Starling 31/7/19 MRC 209/2.) Starling took no further interest in the scheme, calling no further meeting of the Provisional Committee before going to India in early 1920.

While Starling was away, on Paton's initiative, Fletcher, Paton and Sir Thomas Middleton of the Board of Agriculture and Fisheries met for a discussion, following which Paton and Middleton prepared a memorandum which was circulated to the members of the Provisional Committee and which is quoted from here. ("Nutrition Research Memorandum by D.N.Paton", Middleton to Paton, Memorandum, 4/6/20, Memorandum by Middleton and Paton, 4/6/20. MRC 209/2.)

(231) Memorandum by Middleton and Paton, 4/6/20. MRC 209/2.

(232) Only one reply to Middleton and Paton's memorandum was received - W.B.Hardy thought that the idea should be "given a fair trial". Later, Fletcher told T.B.Wood, Professor of Agriculture at Cambridge, that there seemed "no hope of that Joint Provisional Committee, of which Starling was Chairman, doing effective work. Starling has apparently dropped all his former interest in nutrition." (Fletcher to Paton 7/3/21, Hardy to Fletcher 21/6/20 MRC 209/2, and Fletcher to Wood, MRC 2100 I.)

(233) Findlay (1908), 17.

(234) Findlay (1915), 960.

(235) Findlay (1917). This was one of several discussion papers in an MRC Special Report on "The Mortality of Birth, Infancy and Childhood". The purpose of the Report was to assist the planning of further research in this area.

(236) Ferguson (1918).

(237) Paton and Findlay (1918), 99.

(238) Paton and Findlay (1926), 304.

(239) Ibid., 305. In emphasising the importance of housing,

Paton and Findlay placed themselves in line with mainstream medical opinion in Glasgow, a city in which the housing problem was particularly acute. Nevertheless, their stress on "maternal efficiency" and hereditary factors (which were discussed in the concluding chapter of the 1926 report, as well as in Findlay's 1917 discussion paper), gave considerable support to those who sought to argue against slum clearance on the grounds that slum-dwellers would reproduce slum conditions wherever they went. (For some background on the development of housing policy in Glasgow, see Chalmers (1930) ch II, and for some further background, Checkland and Lamb, (1982).)

(240) Cathcart, Greenwood and Paton (1924), 47.

(241) See this thesis footnote 96.

(242) I was given this information by one of my interviewees who had worked in the Glasgow Health Department.

(243) Cathcart and Murray (1931), 40.

(244) Ibid., 38.

(245) Ibid., 51.

(246) Cathcart (1931a).

(247) Ibid.

(248) See for example this thesis pages 121 - 2, 129.

(249) Cathcart (1933), 188 - 9.

(250) See this thesis, Chapter Three, footnote 335.

(251) Hopkins (1906). When discussing some work on the effect of adding the amino acid tryptophane to the tryptophane-free protein zein (Hopkins and Willcock (1906)), he went on to remark:

...no animal can live upon a mixture of pure protein, fat or carbohydrate, and even when the necessary inorganic mixture is supplied the animal still cannot flourish. The animal body is adjusted to live upon plant tissues or the tissues of other animals, and these contain countless substances other than proteins, carbohydrates, and fats.

Physiological evolution, I believe, has made

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some of them well-nigh essential as the basal constituents of diet... The field is almost unexplored; only is it certain that there are many factors in all diets of which the body takes account.

In diseases such as rickets, and particularly scurvy, we have had for long years knowledge of a dietetic factor; but although we know how to benefit these conditions empirically, the real errors of diet to this day remain quite obscure. (Hopkins (1906) in Needham and Baldwin (1949), 134.)

(252) Hopkins was trying to justify a proposal that he had made for the inclusion of Pharmacology and Therapeutics in the Analysts' syllabus. He argued that including these topics which were

...capable of giving some slight medical bias to the minds of even a few students will ultimately prove of no small service to... the medical profession. (Ibid., 130.)

In future medical studies, Hopkins thought, (referring in particular to studies in chemical pathology and dietetics), medical men

...must be joined by men whose primary qualifications are non-medical - men who, saved from the long years of clinical study, are able to bring well-grounded laboratory knowledge... to join their medical confreres in attacking the huge problems which await solution. (Ibid., 132.)

(All Hopkins's remarks were set in the context of a discussion of the "Analyst and the Medical Man", which was the title of his address, and he began by referring to a dispute between Public Analysts and Medical Officers of Health over who should conduct water analyses. For some background see Russell (1977), 171, 208-9, 211.)

(253) Hopkins (1912b).

(254) Ibid., 425.

(255) Ibid., 449 - 50.

(256) The claim could justifiably have been made by several others. See Carter (1977), Ihde and Becker (1971) and McCollum (1957), 201 - 28.

(257) Kohler (1982), 85.

(258) The techniques of vitamin research were expensive because of the length of the feeding experiments and the large colonies of laboratory animals which needed to be maintained.

(259) For Chick and Harden see this thesis footnote 75.

(260) Experimental work on vitamins was begun at the Lister Institute in 1910 by E.A.Cooper and Casimir Funk a visiting chemist from Warsaw, (see footnote 112), working under the Director, C.J. Martin. Cooper worked on the distribution of antineuritic factor (later known as thiamine - vitamin B1), before joining the armed forces at the beginning of the war. A proposal to offer the Institute to the Medical Research Committee split its Governing Body and was defeated by a General Meeting of the Members of the Institute. Martin, who had been in favour of the proposal, found himself in a difficult position and joined the Australian Medical Corps in 1915. Arthur Harden became Deputy Director of the Institute until Martin's return in 1919. Martin encountered beri-beri during his war service and asked Harriette Chick to continue Cooper's work in order to find easily transportable sources of anti-neuritic factor. When scurvy occurred among troops in the East, Chick and Margaret Hume began work on the distribution of antiscorbutic factor (vitamin C). S.S.Zilva, a Russian chemist, and Harden studied the chemical properties and stability of the antiscorbutic substance. Immediately after the war Chick, Elsie Dalyell, Helen Mackay and Hume went to Vienna on behalf of the Accessory Food Factors Committee to conduct work on rickets. On their return this team became the Division of Nutrition of the Department of Experimental Pathology of the Institute. (Drawn from Chick et al (1971).)

(261) For Hopkins's vitamin research from late 1910s see successive annual reports of the MRC.

(262) Hopkins (1913).

(263) In a lecture on "Newer Standpoints in the Study of Nutrition", delivered to the Chemical Society in May 1915, Hopkins explained: "I have selected for my address a somewhat special and limited - though not, I think unimportant - aspect of my subject." (Hopkins (1916), 629.) In this speech Hopkins was concerned with protein rather than vitamins. However, the point is that, (as in his 1906 speech to the Analysts), he discussed the consequences of his approach to the chemistry of life for nutrition, not as a means of attracting chemists to nutrition per se, but to another scientific enterprise which he wished to establish, which was clearly, by this time, biochemistry.

(264) See footnote 08. When the possibility of the Dunn Trust giving a large sum for medical research arose in 1918, Fletcher favoured the money being used for funding national research institutes, one possibility being a nutrition research institute. In 1919 however he advised that the money should rather be used for developing

university departments, and made biochemistry at Cambridge the priority. This did not, of course, make the money immediately available to Hopkins, and it was several years later that the Institute of Biochemistry was finally established. See Kohler (1982) 79 - 81.

(265) When Fletcher wrote to W.B.Hardy of the Food Investigation Board in April 1920 after Hardy had accepted nomination as a member of the Accessory Food Factors Committee, Fletcher told him (with reference to vitamin research:

I should like to see Hopkins pushing ahead on a much bigger scale, without special reference to any medical or other applications at the moment. He is always nervous about asking for more help, though we have given him with enthusiasm anything he has ever suggested. If you were on the special committee, I think you could greatly help in the matter. Hopkins must have Government help... (Fletcher to Hardy 20/4/20 MRC File 204/AFFC Vol I.)

For Hardy, see Hopkins and Smith (1934), Hill (1949).

(266) As defined in Hopkins's 1913 "Dynamic biochemistry" speech. See this thesis pages 48 - 9.

(267) While victory in the rickets controversy, showing the importance of the fine detail of the chemical composition of the diet could demonstrate the value of the reductionistic style of thought which Hopkins advocated, (see this thesis, pages 70 - 1), the standard feeding experiments used in vitamin research were essentially "black box" in approach. That is, such experiments did not advance Hopkins's aim of studying the chemistry of life at the cellular level.

(268) See Hopkins (1923c) as an example of Hopkins's post-war work.

(269) See this thesis, pages 70 - 1.

(270) Cathcart's Committee on Quantitative Problems in Human Nutrition, after the publication of Cathcart, Greenwood and Paton (1924), had become inactive. In mid-1925, Cathcart wrote to Fletcher to suggest that the Committee might be re-activated by reconstituting it, (Cathcart to Fletcher 13/5/25 MRC 2100/II), but it seems to have been over a year before Fletcher did anything to bring this about. In June 1926 Fletcher wrote a minute recording a discussion on "difficulties of nutrition work for MRC and shortage of men", which he had had at lunch with Cathcart, Hopkins and John Boyd Orr. (Minute by Fletcher 2/6/26 MRC 2100/II.) (For details of Orr see this thesis pages 170 - 2.) Soon afterwards Fletcher produced a memorandum which

proposed that one Nutrition Committee be set up in place of the Accessory Food Factors and the Quantitative Problems Committees, which would "...supervise all the studies in nutrition supported by the Council, ...propose fresh researches and ...encourage the better recruitment to the subject of able men." ("Memorandum. Studies on Human Nutrition", by Fletcher. 18/2/26 MRC 2100/II.) Soon after this, the membership of the Quantitative Problems Committee was modified (Mellanby becoming a member), and was then often referred to as the "Nutrition Committee", but the Accessory Food Factors Committee continued to operate.

The main schemes of research during the late 1920s and 1930s arose however, not from the activities of the Nutrition Committee, but from memoranda submitted to the Council by Fletcher, Cathcart, Hopkins and Mellanby in early 1927. (See "Memorandum on Proposed Extensions in Human Nutrition" by Fletcher, 20/1/27, "Proposed Scheme of Nutritional Work at St. Andrews" by Cathcart, 20/1/27, a memorandum on nutrition research at Cambridge by Hopkins, and "Addendum to Memorandum on proposed extension on researches in Human Nutrition" by Mellanby 25/1/27, all MRC 2100/II.) Fletcher's memorandum noted that the subject of nutrition "...has attracted few recruits in the last few years, and the total volume of work in the study (e.g.) of vitamins has tended to decline rather than to increase, and this in spite of the growing importance of the subject to medicine and agriculture." He presented a proposal for a new scheme of research at Cambridge as a remedy for this situation.

(271) Memorandum on nutrition research at Cambridge by Hopkins. MRC 2100/II.

(272) Leslie J. Harris (1898 - 1973). Qualifications include: BSc Manchester, PhD Cambridge 1924. Career includes: Biochemical research under Hopkins; Research Chemist, Coleman Ltd.; Director, Dunn Nutrition Research Laboratories, 1927 - 63; First Honorary Secretary, Nutrition Society, 1941. (See Cruikshank (1978), The Lancet (1973).)

(273) Fletcher to Harris 3/8/27. MRC 2037 I.

(274) Fletcher re-emphasised the required orientation of the research later in 1927, (Fletcher to Harris 15/7/27 MRC 2037 I), and in early 1930, when Harris wanted to deviate from the expected path, Fletcher vetoed the research proposal. Harris, inspired by some comments in Lowry and Pearce (1929), wanted to work on the relative values of white and brown bread, but Fletcher told him:

...this subject is not at all in line with the other work in hand. The Council are hoping that you will concentrate... upon what I may call intensive or analytical studies of vitamin

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action, with a view to finding the underlying physiological or biochemical factors involved. This dietaries question... is at exactly the opposite end of the scale; it is concerned with the application in administrative nutritional practice of the empirical knowledge of vitamins that we possess already. (Fletcher to Harris 4/3/30(a) MRC 2037 II.)

When Harris produced headed notepaper on which he had designated himself "Director", of the laboratory. Fletcher objected:

...my strong advice to you would be to avoid most carefully any aggrandisement of yourself or your laboratory at the start... To do anything now that seems to claim a position still waiting to be won merely gives unnecessary hostage to fortune and, human nature being what it is, is likely to put up the backs of your colleagues elsewhere... I have various diplomatic difficulties here, of which you cannot be fully aware, and if you will not lie low for your own sake (as I strongly advise) you must do it for mine. (Fletcher to Harris 4/3/30(b) MRC 2037 II.)

During 1931, Fletcher also vetoed a proposal by Harris to work on vitamin C and dental disease, because work on dental disease was being done elsewhere, notably by Mellanby's wife, May Mellanby (Hopkins to Fletcher 27/6/31, MRC 2037 III, also AFPC Minutes 25/2/32), and during 1932 Fletcher intervened to stop The Lancet describing Harris as the "Director" of the laboratory. (Fletcher to Sprigge (Lancet) 9/5/32. MRC 3037 IV.)

(275) Mellanby (1922a). Mellanby remarked: "The theory of Ruebner [his spelling] was completely demolished by F.G.Hopkins in his Huxley lecture."

(276) See footnote 82.

(277) Mellanby sometimes spoke about many factors, and "balance" in the diet, but the various factors, and the "balance" between them was seen to be important, chiefly to the extent to which fat soluble vitamin requirement could be affected. The most important factors in this respect were the cereal and calcium contents of the diet. (See, for example, Mellanby (1924), and (1925), 63 - 4.) Two fat soluble vitamins were distinguished by McCollum in 1922, (see McCollum (1957), 281) who proposed that they be named vitamins A and D, vitamin D being the anti-rickets factor. Mellanby later referred to vitamin A as the "anti-infective" vitamin. In his earliest experiments Mellanby had found that his dogs on a fat-poor diet not only got rickets, but became more susceptible to infectious diseases. In the late 1930s, despite the MRC's initial reluctance to provide the necessary funding, Mellanby

conducted laboratory and clinical research on the anti-infective role of vitamin A, and claimed that it had a particularly important role to play in the prevention of puerperal sepsis. (See Mellanby (1926), (1931), Mellanby and Green (1928), (1929), (1930), Mellanby et al (1931). Also: Mellanby to Fletcher 18/12/25 (stamped 20/12/26), "Addendum to Memorandum on proposed researches on human nutrition" 25/1/27, Fletcher to Mellanby 7/2/27, Mellanby to Fletcher 7/2/27, Thomson to Mellanby 19/7/27, MRC 99/6 II. See also Chapter Three, footnote 279.) The following passage from the conclusion of an address published in the British Medical Journal in 1930 summarizes Mellanby's overall emphasis at that time:

I have endeavoured to supply you with evidence, both experimental and clinical, which shows how important is this subject of diet and disease. In particular, I have tried to demonstrate that food includes both harmful and protective agencies. The protective agencies are of the nature of vitamins, and the two I have dealt with are vitamins A and D. The harmful factors are mostly associated with cereals and cereal products so far as present knowledge goes. (Mellanby (1930, 677.)

Later Mellanby's emphasis was more exclusively on vitamin D. See footnote 310.

(278) See Mellanby (1918b).

(279) Of the diseases other than rickets which Mellanby linked with faulty diet, various disorders of pregnancy and childbirth, and dental caries, were mentioned most frequently. The effect of diet on the teeth was a topic on which his wife, May Mellanby, was working. (See Mellanby (1925b), (1934), and Mellanby, M. (1929), (1930).)

(280) Hopkins (1919), 507. This was part of a series of lectures on "Physiology and National Needs".

(281) In the Nutrition Abstracts and Reviews article Hopkins remarked:

It is often felt that concerning matters so urgent as its own nutrition, humanity, with all its experience of the ages behind it, can have so little to learn from modern science, yet, as is the case of so many other established traditions, an assumption of this kind is wholly unjustified. Tradition accumulates prejudices quite as often as truths, and the former are apt to be more potent in their influence. With sufficient space it would be easy to show that faulty nutrition has played a large part in inhibiting human progress, and even to show that few races have at any time been ideally nourished... (Hopkins,

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(1931b) 4.)

Hopkins's remarks contrast strikingly with Cathcart's comments in his article in the first number of Nutrition Abstracts and Reviews. (See this thesis, page 92, footnote 223.)

(282) See this thesis, pages 66 and 71.

(283) See this thesis, footnote 96.

(284) Mellanby to Lane-Claypon 5/10/16, QEC Mellanby's personal file.

(285) Mellanby to Lane-Claypon 27/4/20, EM, and QEC Mellanby's personal file.

(286) Mellanby (1927).

(287) The "Bread and Food Reform League" were so persistent in their criticisms of Mellanby, that Fletcher began to describe its founder and secretary Miss May Yates as a "perfect pest" and a "monomaniac nuisance". (Fletcher to Chick 25/10/26 and 26/10/26. MRC 204 AFPC Vol III.)

(288) Mellanby particularly condemned oatmeal, and his comments regarding the Scottish National Food at the 1922 British Medical Association meeting in Glasgow (when he and Findlay introduced a discussion on rickets - see this thesis 75 - 7), were met with derision in the Scottish Press. (See Mellanby (1950), 214 for a cartoon which ridiculed Mellanby in a local newspaper.) When Mellanby's second MRC Report was published (Mellanby (1925a)), there was a new spate of ridicule. The Scotsman, (11/4/25) under the heading "Ban on Porridge", asked:

Are Scotsmen to forswear oatmeal because a Sassenach Professor has pronounced it to be deficient in "anti-rachitic vitamin"?... The suggestion that the consumption of oatmeal is a fertile cause of rickets, and that animals that eating oats must be "exposed to some sort of ultra-violet radiations", if their bones are to grow straight and of the right shape, is enough to fill the national bosom, if not with wrath, with derisive laughter.

Douglas Chalmers Watson, Physician of the Royal Infirmary and Royal Hospital for Sick Children, Edinburgh, and author of Food and Feeding, a Practical Manual (1910), wrote a letter to the Scotsman, (11/4/25) assuring readers of the value of oatmeal, and Dr. Robertson, Medical Officer of Health of Edinburgh, criticised Mellanby in the Manchester Guardian (16/4/25).

(289) Sir William Arbuthnot Lane, (1856-1943) was a consulting surgeon at Guy's Hospital until he retired in

1918. He had become famous in the medical world and beyond for his innovations in the treatment of cleft palate and fractures, and through his interest in "chronic intestinal stasis". Lane's concern with the latter condition was the basis of a publicity campaign which he began during the 1920s. He explained his views in a paper in The Lancet in June 1925:

...the public must be taught the necessity of evacuating the large bowel three times a day. In the first instance this can only be secured by correct diet and suitable exercises... (Lane (1925), 1210.)

For his articles in the popular press with which Lane endeavoured to propagate his message, he was condemned by the Ethical Committee of the BMA. He was deemed to have broken the BMA's rules which forbid "self-advertisement", and this resulted in his resignation from the Association in August 1925. He proceeded to establish the "New Health Society", which aimed,

(1) To teach the people the simple laws of health.

(2) To attempt to render fruits and vegetables as abundant as possible, and accessible to the general public at reasonable cost.

(3) To put the people back upon the land, and so relieve the misery and hardship due to the overcrowding of big towns and more especially London.

The Society organised public meetings throughout Britain, and published a journal entitled "New Health". (See Tanner (1946) and Layton (1956).)

(290) The first donation, of £10,000, was from Mrs Charles Turner, for "advancing knowledge with regard to Dietetics and the Chemistry of Nutrition." An appeal raised a further £10,000 from Messrs Wander Ltd., (makers of "Ovaltine"), and smaller sums from other companies. The scope of the Chair was defined by the Senate of the university as "The Principles of Nutrition in Health and Disease", and it was established at St Thomas's Hospital Medical School. (SH 1927-28 Professoriate, Proposed Chair of Dietetics, File No 1173; Senate Minutes 1927-28 2359.)

(291) S.J.Cowell (1891-1971). Education includes: Queens' College Cambridge; University College Hospital Medical School, MB, BCH 1920. Career includes: Assistant in Medical Unit, University College Hospital Medical School, 1921 - 3; Clinical Assistant to Edward Mellanby, 1923 - 28; Professor of Dietetics, London University, St Thomas's Hospital, 1928 - 36, University College Medical School 1936 - 56; Vice Dean University College Medical School, and Director of Clinical Pathology, University College Hospital. (See British Medical Journal (1971).)

(292) Plimmer, R.H.A. (1877-1955). Qualifications and career include: BSc Chemistry, University College, London 1899; PhD Berlin, 1902. Career includes: Lister Institute 1902 - 4; Assistant Professor of Physiological Chemistry 1907 - 12, Reader 1912 - 19, University College, London; Biochemist, Rowett Research Institute, 1919 - 22; Professor of Chemistry, St Thomas's Hospital Medical School, 1922 - 42. See Lowndes (1971).

(293) Mellanby discussed the appointment with his brother John who was Professor of Physiology at Oxford, and J.B. Leathes, both of whom were members of the committee which chose the new Professor. They both agreed that "Cowell will have a strong claim to the appointment." (Mellanby to T.R. Elliott, Member of the Medical Research Council, 1/4/28, MRC 99/6 III.) Hopkins was also a member of the committee. (SH 1927-28 Professoriate, Proposed Chair of Dietetics, File No 1173.) In June 1928 Mellanby commented to Fletcher on Cowell's chances: "I think his chances are good... Corry Mann [another candidate, see footnote 180] has no chance... The other strong candidate is as you probably know Plimmer, but I think it would be disastrous to put a non-medical into a post like this, or even a man without an intimate knowledge of the bio side of biochemistry. Even more, Plimmer is Lane's 'prototype'". (Mellanby to Fletcher 29/6/28. MRC 99/6 III.)

These comments not only illustrate Mellanby's distaste for Lane and those connected with the "New Health Society", but also help to clarify his preferred approach towards medical research, for he also disapproved of Plimmer because of his lack of medical qualifications. For Mellanby medical qualifications were important because they would help to ensure that the researcher's views would be regarded with respect by clinicians. As Mellanby pointed out to Elliott, the new Professor was "...going to be placed at St Thomas's..." and that the person responsible would be given "...clinical and laboratory opportunities for research." The new Professor would be in a similar position to Mellanby himself at Sheffield, and by having his assistant appointed, Mellanby would advance the cause of his own particular approach to medical research. As I point out in footnote 82, where the appointment of Florey at Sheffield is discussed, Mellanby was not bothered by the fact that the Florey would be unable to perform the pathologist's traditional service role with respect to clinicians. If Plimmer was appointed to the Chair of Dietetics, being unable to conduct clinical research he could easily find himself servicing his clinical colleagues' requirements with respect to dietetics, rather than conducting what Mellanby regarded as important research.

(294) Mellanby (1927).

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(295) Ibid., 634.

(296) Ibid.

(297) Ibid., 635.

(298) Ibid.

(299) Ibid.

(300) The final section of Mellanby's speech, on "Cooking Facilities" was short and sweet. He suggested that there were two questions to be considered: "...whether it is desirable for the State (a) to play a greater part in the teaching of cookery and (b) to provide a means of cooking food for public consumption." He soon dismissed the first question: "I imagine that greater facilities for the teaching of cookery will be provided by local authorities as the demand for such by the public increases." He then continued: "The second point - namely the provision of means of cooking food by the State - seems to me of greater interest." This emphasis is in line with Mellanby's disinterest in domestic science which we have already noted, and also highlights his preference to technocratic solutions. He continued: "...the large trade carried on by cookshops in poorer areas... seem[s] to indicate the desirability of the setting up of public and official organizations whereby people can obtain food already prepared for consumption either at home or on the premises where cooked." (Mellanby (1927), 636.)

(301) See, for example, Cathcart (1931c).

(302) See, for example, Caneva (1978), and Harwood, (1976).

(303) See for example the way in which T.C.Carnwath, Medical Officer of the Ministry of Health contrasted Cathcart and Mellanby's approaches to nutrition in 1931 in this thesis, page 123.

(304) See this thesis, page 14.

(305) Ibid.

(306) See this thesis, page 92.

(307) For a brief discussion of "family coefficients", and "man values" see Cathcart and Murray (1931), 7 - 8.

(308) See League of Nations (1932a).

(309) Cathcart to Hudson 3/11/31. PRO MH 56/44.

(310) The following passage from Mellanby's 1931 Hastings

Lecture on "Diet and Health" illustrates the point clearly. After reviewing recently acquired knowledge he continued:

Now that we have this knowledge, what are we going to do with it? Have we to wait for its benefits until it has gradually diffused from individual to individual, or have the information, and the facilities for making use of it disseminated by the Government and other bodies? What is the use of telling the poor to eat more vegetables, butter, milk and eggs? With all the good will in the world they cannot get them. Feeding with the proper ordinary foodstuffs will provide a sufficiency of all the protective foodstuffs except vitamin D, and for this substance supplies of such preparations as cod-liver oil or irradiated ergosterol [an artificial vitamin D concentrate] must be obtained by some means for all young infants.

It is obvious that many problems of social economics and politics are involved in seeing that every member of the community, at least in early life, gets properly fed. Whatever the cost, the money will be saved a hundred fold, for by this means we have the best method of prophylactic medicine yet devised...

However, it is not my province to discuss economic, social and political problems. I can only point out the facts. (Mellanby (1931), 91 - 2.)

(311) See pages 27 - 8.

(312) See, for example Sadler (1978), as an example of the work which has been done on this aspect of early twentieth century medicine.

(313) During the 1920s and 1930s important clinically-orientated work was done in the physiology department by David Cuthbertson. See Cuthbertson (1978), and (1963a)

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(01) For Orr's biographical details see 170 - 2, and footnote 309.

(02) See this thesis, pages 103 - 6. Mellanby's speech was given at the annual BMA meeting in Edinburgh on 21/6/27, and was published in the British Medical Journal on 8/10/27.

(03) "Brief statement on modern developments in nutrition and its relationship to disease." Edward Mellanby, PRO MH 56/46.

(04) Ibid.

(05) Newman to Robinson [the Permanent Secretary, see footnote 09] 6/12/27, PRO MH 56/46. But Newman also told Robinson that Mellanby's proposals were "likely to receive a good deal of support among food experts of the physiological sort", and continued:

They think... a) we do not make enough of physiological nutrition but spend our time chasing adulteration, food poisoning and milk grading... b) that we do not undertake sufficient public education in health and therefore the public is left to be guided by Arbuthnot-Lane, Bruce-Porter, Eustace Miles, and others of that kidney."

For Arbuthnot Lane see Chapter Two, footnote 289. For Eustace Miles see Twigg (1981) page 169, and Miles (1909), (1922). Sir Harry Edwin Bruce Bruce-Porter MD (1869-1948) was a member of the Medical Council of the New Health Society. (WW)

(06) Newman's thought on the social causes of, and solutions to, nutritional problems was similar to that of Cathcart. In a book on infant mortality published in 1906 he asserted:

...it is ignorance and carelessness of mothers that directly causes a large proportion of the infant mortality... What is needed is a training in those arts of domestic management of which compulsory education has deprived the girls of the artisan classes... (Newman (1906), 221, 268.)

In 1920 in a lecture to the "National Health Society" he referred to "nutrition" as one of three "elements of health", the other two "elements" being "fresh air" and "exercise" and suggested that since people in Britain received "a living wage" and that there existed "a sufficient yield of... food necessary to... health" that people "do not live the healthy life because they lack the knowledge." (Newman (1920), 12 - 14; for the "National Health Society" see Newman (1924), 19.) But the role that Government could take in health education was, according to Newman, limited. He explained in a memorandum in 1924 that

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the contributions that local and central government could make to preventative medicine were "to some degree fulfilled" and that now in "every direction the prevention of disease is becoming a personal concern..." (Newman (1924), 4.) He explained that it was voluntary rather than official organisations had the key role to play in promoting this personal concern. (Ibid., 18.)

(07) For Mellanby's attitude towards the "health societies" see page 104, and Chapter Two, footnote 293.

In 1924 Newman produced a memorandum entitled Public Education in Health, which was revised and re-issued the following year. In both editions of the memorandum Newman listed the voluntary organisations which he believed had a valuable role to play in improving the Nation's health (see last footnote). The 1925 edition listed over twenty organisations included Arbutnot lane's newly formed "New Health Society". (See Newman (1924), (1925).)

(08) In 1928, Newman gave the BMA's Hastings Lecture on "The Foundations of National Health". Here Newman explained:

The fundamental problem of health... is the wise and scientific nurture of the body. Now, can we say in plain and categorical terms of what such nurture consists? Here is your body with its nature, its heredity and its variation, its inborn instincts, impulses, and organic functions, the instrument of emotion, intellect, and will- a living organism of long biological ancestry, the whole man- can we define the best nurture for it? I think we can, but only in general terms. Perhaps indeed one term, nutrition, is the only answer... The elements of nutrition for the body are six in number:

Food	Warmth
Fresh air and sunlight	Cleanliness
Exercise of the body	Rest

(Newman (1928), 14.)

This was not a new point of view for Newman. See page 85. In 1915, Newman listed a total of 22 causes of "defective nutrition". See Board of Education (1915), 67.

(09) Robinson to Newman 1/7/30, PRO MH 56/43.

Sir Arthur Robinson (1874-1950). Education: Queens College Oxford, Classical Scholar. Career: Entered Civil Service 1897. Secretary to the Ministry of Health, 1920 - 35. (WW)

I have been unable to locate any evidence as to why Robinson revived the idea of the Advisory committee, and why he chose this particular time. However, according to some remarks by Fletcher in a letter to Lord Dawson, President of the Royal College of Physicians, Robinson was certainly sympathetic to the idea of increased state

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involvement in nutrition. Dawson had asked Fletcher why the Ministry was setting up the Advisory Committee, and in his reply, Fletcher told Dawson that, in his opinion, the "medical administrator" had "delayed inexcusably" the application of nutritional knowledge, and that he had told this to the Minister of Health as well as to Robinson and Newman. He then continued: "Robinson is wholly sympathetic, and took the chair when I said the same thing at length two years ago." (Fletcher to Dawson 15/5/31, MRC 2100/1, vol 3. The meeting that Fletcher alludes to was the Public Health Congress held in London in November 1928. See BMJ (1928), II, 956, and The Lancet (1928) II, 1079. For Dawson see Watson (1951).)

If, as it appears, it was Robinson who revived the idea of a Ministry of Health Nutrition Committee, it may be that he did this in 1930 as at that time the Labour Party had recently taken over the Government. He may have expected a more sympathetic hearing from the new Minister, Arthur Greenwood (1880-1954) than from the previous one, Neville Chamberlain (1881-1943). Another committee concerning food - the "Food Standards Committee" was also set up under Greenwood, but was disbanded because of economic cutbacks (which also affected the ACN, see page 122), in the autumn of 1931, after the Labour Government had fallen, and Chamberlain took over the Ministry once again. (See Parliamentary Debates (House of Commons) 253, 342 (4/6/31), 251, 340 (15/4/31), 266. 2093 (9/6/32).) Chamberlain's attitude towards nutrition is indicated by his response, when Chancellor in 1936 to proposals of the Minister of Health, Sir Kingsley Wood, for extending the provision of free and cheap milk. Chamberlain commented:

I am afraid..that the essence of these proposals is such as to make it clear to me that we could not adopt them even in principle without the closest examination of their implications. There are ideas about now on the subject of nutrition which give rise to serious misgivings in my mind and unless we are careful the development of these ideas may involve serious political risks and possibly unlimited expenditure. The ideas and their exponents are such, moreover, as to make me apprehensive lest a moderate government scheme should rather wet their appetite for more rather than satisfy their present demands. (Chamberlain to Wood 12/3/36, PRO MH 79/347 .)

(10) When the Ministry of Health was first established in 1919, one of the divisions which were set up at the time (Division IV) was entitled "Supervision of Food Supplies", and was later renamed "Nutrition, Food and Drugs Administration, London Hospitals and Food Supplies". The Senior Medical Officer of the Division was initially A.W.J. MacFadden, who was succeeded in 1929 by T.C. Carnwath who had previously been a Medical Officer in the "General

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Health and Epidemiology Division." At the same time, J.M.Hamill, previously Medical Officer of Division IV, became Carnwath's deputy.

The alledged pre-occupation of the Ministry with "...adulteration, food poisoning and milk grading..." (see footnote 05), is illustrated by the publications of Division IV. In 1923, Hamill produced "Notes on the Pasteurisation of Milk", and from 1925 to 1938 G.W.Manier Williams, Chemist of the Division produced a series of reports on glazes and enamels of cooking utensils, and glass fragments, benzoic acid, sulphur dioxide, hydrogen cyanide, antimony, aluminium and lead in food.

Nutrition was not entirely ignored by the Ministry however, for in 1921 Hamill produced a report on "Diet in Relation to Normal Nutrition". According to Newman who wrote the foreword to this report, it was the result of "Requests... addressed to the Ministry for a concise summary of our present knowledge of dietetics. Newman also mentioned that

The Ministry have in contemplation the issue of one or more leaflets, which may serve as guidance to Local Authorities in any popular instruction in this subject which they deem expedient.

(Hamill (1921) 2.)

I have found no evidence that any such leaflets were produced, although Newman did produce several pamphlets which dealt more generally with health education. (Newman (1924), (1925), (1926).)

Carnwath, T.C. (1878 - 1954) Career includes: Deputy Medical Officer of Health, Manchester, Lecturer in Public Health, St. Thomas's Hospital, Medical Inspector, Local Government Board. Medical Officer (1919 - 29), Senior Medical Officer (1929 - 35), and Deputy Chief Medical Officer (1935 - 40), Ministry of Health. (Med Dir and Obituary, The Times 5/4/54.)

(11) Carnwath to Newman 6/3/30, PRO MH 56/43.

(12) Ibid.

(13) Newman to Robinson 6/12/27, PRO MH 56/46.

(14) Carnwath to Newman 6/3/30, PRO MH 56/43.

(15) Robinson to Newman 1/7/30, Newman to Robinson 4/7/30, PRO MH 56/43. Newman told Robinson that he had been busy and was also waiting for the outcome of the implementation of the Local Government Act. (For the Local Government Act (1929) see Gilbert (1970) 229 - 35.)

(16) Newman to Beckett 6/10/30, PRO MH 56/43. Newman's apparent reluctance to act on Robinson's initiative is possibly explainable by the relationship between the two

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men. According to Gilbert, after Robinson's appointment to replace the first Permanent Secretary, Sir Robert Morant, who died suddenly in 1921, the relationship between Newman and Robinson, "...quickly deteriorated into petty jealousy and mutual dislike. Under Robinson, Newman felt, the position of Chief Medical Officer declined. Previously both he and Morant had envisaged the CMO as having equal status to the Permanent Secretary, with separate access to the Minister." (Gilbert (1970) 210.) These remarks are mostly based on a list of "Chief Difficulties with Sir Arthur Robinson" in Newman's diary. (n.d. opposite entries Feb 1935 ND V.) One incident listed here was Robinson's unilateral approval of the "P.L. [Poor Law] England Circular", on March 20th 1930, which was shortly after Robinson's revival of the idea of a Nutrition Committee. In addition, mid 1930 seems to have been a particularly low point in Newman's relationship with Robinson, for in May he recorded a, "Long talk with Minister on Robinson's neglect of Medicine and "surveying"." (ND V.)

(17) Beckett was a non-medically qualified civil servant.

(18) Beckett told Machlachlan and Newman that "...the medical staff are frequently called upon to advise other Government Departments and Local Authorities as to the suitability of dietaries in various institutions..." (Beckett to 1. Mr Machlachlan, 2. CMO (Newman) 10/10/30, PRO MH 56/43.)

(19) Ibid. Two Committees dealing with aspects of food technology and including "outside" members had been appointed in the past. These were the "Departmental Committee on the Use of Preservatives and Colouring matter in Food." and "Departmental Committee on the Treatment of Flour". Hopkins had been a member of both of these committees. See Ministry of Health (1924), (1927).

(20) Machlachlan was a non-medically qualified civil servant.

(21) Machlachlan to CMO (Newman) 13/10/30, PRO MH 56/43.

(22) I am referring here to Mellanby's problems with "Health Society's and the press. (See page 104.) A contemporary opinion which ascribes this kind of motive to Newman himself, is given by Fletcher in his letter to Dawson referred to earlier in footnote 09. Fletcher thought that as the composition of the Advisory Committee was to be almost identical to that of the Nutrition Committee of the MRC, (which at this time consisted of Cathcart, Chick, Drummond, Major Greenwood, Hopkins, Orr, Mellanby, J.J. Macleod and G.P. Crowden - (see MRC Annual Report 1930-31) it would duplicate the work of the MRC's committee. He continued: "They [The Ministry of Health]

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should leave the research work to us. Laboratory men like Hopkins and others should be left to their jobs and not used for window-dressing by the Ministry, or, if more than that is intended by G.N., [George Newman] not used for work which properly belongs to medical practitioners, Medical Officers of Health and social workers. (Fletcher to Dawson 15/5/31, MRC 2100/1 vol 3.) As indicated earlier however (in footnote 16), Newman, far from actively seeking the establishment of a ACN as a public relations exercise, was not enthusiastic about the venture, and that the impetus in 1930 probably came from Robinson.

(23) See this thesis pages 104 - 5.

(24) Robinson to Minister (Arthur Greenwood) 21/10/30, PRO MH 56/43.)

(25) Arthur Greenwood to Robinson 22/10/30, PRO MH 56/43.

(26) Carnwath to Newman 6/3/30, PRO MH 56/43.

(27) For Major Greenwood see Chapter Two, footnote 209.

(28) Mottram, Vernon Henry (1882-1976). Education and Career includes: Sizar, Scholar and Fellow, Trinity College Cambridge 1901 - 11. Research under Voit in Munich. Senior Demonstrator and Lecturer in Chemical Physiology, Liverpool University, 1911 - 14. Lecturer in Physiology, McGill University, Montreal 1914 - 16 and University of Toronto 1916. The years 1916 - 18 were spent in tuberculosis sanatoria. Senior Science Lecturer, Caterham School, 1918 - 19. Biological research, Lever Bros 1919 - 20. Professor of Physiology, King's College of Household and Social science 1920 - 44. (WW and biographical notes, back cover, Mottram (1960)) The last-mentioned reference also records the following points concerning Mottram's religious and political affiliations: "He belongs to no political party, but has marked leftward sympathies. He is a member of the Society of Friends."

(29) Newman to Robinson 22/10/30, PRO MH 56/43.

(30) The invitations to serve on the Committee were sent out on 10/12/30, and the Committee was officially appointed from 6/1/31 for a three year term of office until 31/1/33. Mr F.R.Hudson, official of the Ministry of Health was appointed secretary of the Committee. PRO MH 56/43.

(31) See Newman's Annual Report as Chief medical Officer of the Ministry of Health for 1927 ((1928), 178). Major Greenwood's work for the Ministry had mostly not been concerned with nutrition. For example, he contributed to a report on influenza and wrote a report on cancer. (Greenwood (1926).) He was, however, joint author of a

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report on diet and cancer. (Copenan and Greenwood (1926).)

(32) See Chapter Two, footnote 210.

(33) Cathcart, Greenwood and Lothian (1920).

(34) Cathcart, Paton and Greenwood (1924).

(35) See Chapter Two, footnote 17.

(36) See for example Mottram (1931), 20 - 21, where Mottram echoes Hopkins's comments regarding the likely existence of sub-acute deficiency diseases. (For Hopkins on this matter, see this thesis 70 - 71.) He also commented, in similar terms to Cathcart (see this thesis page 91) that from "....1912 onwards there has been almost an orgy of work on 'accessory factors' by researchers, good, bad and indifferent...." (Mottram (1931), 99.) But in contrast to Cathcart, Mottram continued: "The results go the whole way to justify Hopkins' belief in the necessity of 'accessory factors' in human and animal nutrition."

(37) For Mellanby's attitude towards domestic science see this thesis, 103. Mottram's professional achievements were rather limited prior to his appointment at Kings College of Household and Social Science. His career was promising until he suffered from tuberculosis. (See footnote 28.) His enthusiasm for domestic science is indicated by his publications. In 1926 he published a book entitled Functions of the Body, intended as an introduction to physiology "....not for the medical student only, but also for students of nursing, domestic science, teaching and massage, and for that section of the general public which is eager to know something of the way in which the body works." (Mottram (1926).) Mottram's Manual of Modern Cookery, which he wrote with Miss Lindsay, (Lindsay and Mottram (1927)), was advertised as a "valuable book for use in schools and colleges". (See Clifford and Mottram (1929), 2.) He published, with another of his assistants, Properties of Food. A Practical Text-Book for Teachers of Domestic Science. (Clifford and Mottram (1929).) Like Cathcart, (see, for example Cathcart (1928d)), Mottram sometimes wrote primarily for a lay audience. Food and the Family, first published in 1925 aimed to "....present to the lay reader, in terms as intelligible as they may be made, the results of modern scientific research into the value of foodstuffs, with especial reference to economy in food compatible with health." (Mottram (1925), x.) In 1932, Mottram published, with his wife, Sound Catering for Hard Times, which aimed to show the middle-class how they could obtain, "....the same food value at less cost...." (Mottram and Mottram (1932), 10.)

(38) Mottram to Arthur Greenwood (Minister of Health)

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17/1/31, PRO MH 56/43.

(39) W.H.Howes (Arthur Greenwood's private secretary) to Mottram 17/1/31, PRO MH 56/43.

(40) Carnwath to Newman 6/3/30, PRO MH 56/43.

(41) Ibid., and Beckett to 1. Mr Machlachlan and 2. CMO, 10/10/30. PRO MH 56/43. (See page 116.)

(42) Minutes of First Meeting of Advisory Committee on Nutrition 28/1/31. PRO MH 56/44.

(43) Ibid.

(44) Hamill, J.M. Career includes: Assistant Medical Inspector, then Medical Inspector, Local Government Board. Sanitary Officer, Central Force Headquarters, Horse Guards, Deputy Assistant Director of Medical Services, British Expeditionary Forces, during the Great War. Medical Officer 1919, Deputy Senior Medical officer 1929, and Senior Medical Officer, 1935, Ministry of Health. Retired 1941. (Med Dir)

(45) See Ministry of Health (1930). The responsibilities of Medical Officers with respect to institutional diets are specified as follows:

Dietary Tables for the different classes of inmate, other than the inmates of the sick wards and mental wards and infants, shall be framed by the Council, after obtaining the written advice of the Medical Officer, and every inmate shall be dieted in accordance with such of the Dietary Tables as is applicable to his class. (Page 9, paragraph 35.)

A similar definition of Medical Officers' responsibilities with respect to children's diets is given under the heading "Children's Homes". (Page 20, paragraph 81.)

(46) Minutes of First Meeting of Advisory Committee on Nutrition 28/1/31. PRO MH 56/44.

(47) Buchan, G.F. Qualifications and career include: MB ChB 1901, Glasgow; DPH 1901, Cambridge; Lecturer in Public Health, London School of Hygiene and Tropical Medicine, Guy's Hospital Medical School; Medical Officer and School Medical Officer, Borough of Willesden. (Med Dir)

(48) Minutes of Poor Law Children's Homes Sub Committee 16/4/31. PRO MH 56/44.

(49) Minutes of Second Meeting of Advisory Committee on Nutrition 29/5/31. PRO MH 56/43.

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(50) Memorandum to Chairman (Major Greenwood) 28/5/31, PRO MH 56/43.

(51) Minutes of Institutional Diets Sub Committee 29/6/31. PRO MH 56/44.

(52) Buchan to Hudson 30/6/31, PRO MH 56/45.

(53) Major Greenwood to Hudson 2/7/31, PRO MH 56/45.

(54) Minutes of Institutional Diets Sub Committee 20/10/31. PRO MH 56/44.

(55) Minutes of Third Meeting of Advisory Committee on Nutrition 6/11/31. PRO MH 56/45.

(56) Minutes of First Meeting of Advisory Committee on Nutrition 28/1/31. PRO MH 56/44.

(57) Ibid.

(58) Ibid.

(59) Memorandum by Cathcart, circulated by Hudson 1/4/31. PRO MH 56/44.

(60) See this thesis pages 97 - 8.

(61) Memorandum by Cathcart, circulated by Hudson 1/4/31. PRO MH 56/44.

(62) Minutes of Second Meeting of Advisory Committee on Nutrition 29/5/31. PRO MH 56/43.

(63) This was the crisis which led to the fall of the 1929-31 Labour Government, and the formation of the National Government after which almost every sphere of public expenditure was affected by financial stringency. For the crisis see Bassett (1958).

(64) Minutes of Third Meeting of Advisory Committee on Nutrition 6/11/31. PRO MH 56/45.

(65) Cathcart to Hudson 3/11/31. PRO MH 56/44.

(66) Carnwath to Newman 1/12/31. PRO MH 56/51.

(67) Ibid.

(68) See Chapter Two, footnote 277.

(69) See this thesis, page 105.

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(70) The Memorandum on the Poor Law Children's Homes recorded as evidence of the children's state of nutrition that: "In the main the children appeared bright and cheerful, with a good colour, and although some of the visits took place in wintry weather, chilblains and colds were not unduly prevalent." (Ministry of Health (1932a), 6.)

(71) Mellanby would probably not have disagreed with the recommendations on pages 8 - 9 of Ministry of Health (1932a), but there was no suggestion of, for example, a daily dose of cod liver oil, or any mention of a need to reduce the cereal component of the diet.

(72) During this time several minor issues were dealt with unproblematically by post. For example, in July 1932 the ACN advised the Minister on the vitamin content of reconstituted cream. Memorandum on Vitamin Content of reconstituted cream 9/7/32. PRO MH 56/45.

(73) The suggestion for a pamphlet on "adult nutrition" had been made by Buchan. Minutes of Third Advisory Committee on Nutrition Meeting 6/1/31, PRO MH 56/45.

(74) Statement by Professor Greenwood at Third Advisory Committee meeting 6/11/31. PRO MH 56/45.

(75) In view of Fletcher's comments to Dawson that are related in footnote 09, it seems probable that Fletcher was the source of the accusations that the Ministry had not been applying the results of MRC Nutrition Research.

(75) Ibid.

(76) Statement by Professor Greenwood at Third Advisory Committee meeting 6/11/31. PRO MH 56/45.

(77) Memorandum on MRC nutrition research, by Mottram, discussed at Fourth Advisory Committee meeting 12/2/32, PRO MH 56/45.

In his memorandum Mottram referred to the following MRC Reports:

On "general problems of nutrition": Greenwood and Dunlace (1918), Cathcart Paton and Greenwood (1924), Paton and Findlay (1926), Corry Mann (1926), Cathcart and Murray (1931), Orr and Gilks (1931).

On "deficiency diseases": Ferguson (1918), Mellanby (1921), Corry Mann (1922), Korenchevsky (1922), Accessory Food Factors Committee (1923), Mellanby (1925).

On "dental disease": Mummery (1922), Committee on Dental Disease (1925), (1931), Mellanby, M., (1929), (1930).

Other reports on "vitamins": Medical Research Committee (1919b), Bourdillon et al (1931), Bracewell et al (1930).

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On "minerals": Orr and Leitch (1929), Orr (1931), MacKay (1931).

"Miscellaneous": McCance and Lawrence (1929).

(78) Cathcart to Greenwood 8/2/32, PRO MH 56/45. Note that Cathcart's comments are in direct contradiction to Mellanby's claims during his 1931 Hastings lecture. See Chapter Two, footnote 309.

(79) This refers to the work described in Committee upon Dental Disease (1931).

(80) Major Greenwood to Hilton Young (Minister of Health) 27/2/32. PRO MH 56/45, and Ministry of Health (1932c).

(81) Ibid.

(82) Vitamin D is the anti-rickets vitamin. See Chapter Two, footnote 277.

(83) Carnwath to 1, Mr Beckett, 2. CMO (Newman) 18/4/32, PRO MH 56/46. The work in Dundee, Reading and Cardiff referred to here is Cathcart's dietary surveys. (Cathcart and Murray (1931) and (1932).)

(84) Ministry of Health (1932c).

(85) Minutes of the Fourth Advisory Committee Meeting 12/2/32. PRO MH 56/48.

(86) See Chapter Two, footnote 279.

(87) Secretary to members of the Advisory Committee, 8/12/32. PRO MH 56/45.

(88) Ministry of Health (1932c).

(89) Circular on Mottram's Memorandum on Teeth by Greenwood, sent 12/12/32. PRO MH 56/46.

(90) Summary of Comments on Greenwood's Circular prepared by Hudson, circulated 28/3/33. PRO MH 56/46.

(91) Buchan first made this suggestion at the November 1931 meeting of the Advisory Committee before Greenwood intervened with the statement on MRC nutrition research. Minutes of Advisory Committee Meeting, 6/11/31, PRO MH 56/45.

(92) Summary of Comments on Greenwood's Circular prepared by Hudson, circulated 28/3/33. PRO MH 56/46.

(93) Ibid.

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(94) Ibid.

(95) Ibid.

(96) Minutes of Advisory Committee Meeting 28/7/33. PRO MH 56/46.

(97) See Webster (1982), 113 on the increase in "outside criticism" of the Ministry of Health during the early 1930s, and how the Ministry of Health and Board of Education reports were reorganised in order to combat it.

(98) Webster gives special prominence to Alan Hutt's The Condition of the Working Classes in Britain (1933) and lists eight of the "more important publications" which followed from 1935 onwards. (Webster (1982) 126, footnote 21. Of special importance for the story related here are Weekend Review (1933) and British Medical Association (1933).)

(99) It was, as Webster points out, the variation in the nutrition statistics that supplied Hutt with the ammunition for The Condition of the Working Classes... See Webster (1933), 113. For a later, more fundamental attack on the clinical concept of nutrition, see Clark (1938).

(100) Weekend Review (1933).

(101) The first contribution to the debate appeared in the Weekend Review of 4/2/33, and the "Hungry England Report" appeared 1/4/33.

(102) The BMA Committee was appointed on 12/4/33. See footnote 157.

(103) British Medical Association (1933).

(104) Minutes of Advisory Committee Meeting 28/7/33. PRO MH 56/46.

(105) H.E.Magee. Qualifications and career includes: BSc Belfast 1914; MB BCh 1918; Captain, Indian Medical Service; Lecturer in Physiology, University of Aberdeen; Head of Physiology Department, Rowett research Institute; Medical Officer, then Senior Medical Officer, Ministry of Health 1933 - 55. (Med Dir and British Medical Journal (1963).)

(106) For Magee's appointment and duties, the Annual Report of the Chief Medical Officer of the Ministry of Health for 1933 (1934), 160.

(107) Carnwath to Magee 11/8/33. PRO MH 56/48.

(108) Simpson, R.H. Qualifications and career include: MB

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BS 1914; DPH Oxford, 1920; Pathologist Cancer Research Department, Chief Assistant to Medical Unit, Clinical Assistant Medical Out-patients Department and House Physician, St Barts; Clinical Assistant National Hospital for Diseases of the Heart; Physician East London Hospital for Children; Divisional Medical Officer, Public Health Department, London County Council. (Med Dir)

(109) Simpson's secondment to the LCC began on 27/11/33. Carnwath to Simpson 16/11/33. PRO MH 56/48.

(110) Joint Secretaries to Committee, May 1934. PRO MH 56/46.

(111) Board of Education Nutrition Enquiry 1933 - 34 by R.H.Simpson March 1934. PRO MH 56/46.

(112) Ibid.

(113) Statistics using the original categories (see page 84), had appeared in some of Newman's early annual reports as CMO of the Board of Education, but from the report for 1920, only the percentage of children suffering from "malnutrition" was reported.

(114) Board of Education Nutrition Enquiry 1933 - 34 by R.H.Simpson March 1934. PRO MH 56/46.

(115) See this thesis pages 84 - 5, and Board of Education (1934) and (1936), 10 - 20, and Clark (1938).

(116) Nash, E.T. Qualifications and career include: M.R.C.S. Eng, L.R.C.P., London, 1896; DPH Vict 1908; Public Health Research Fellow, Victoria University; Senoir Assistant Medical Officer of Health, County Borough of Derby; Medical Officer of Health, and School Medical Officer, Wimbledon; Medical Officer of Health, and School Medical Officer, Heston and Isleworth. (Med Dir)

(117) See Carnegie U.K. Trust (1934) "Cookery Experiment" 66 - 7. For a review of the cookery book that Nash eventually produced see The Lancet 18/9/37, 721.

(118) Minutes of Advisory Committee Meeting 28/7/33. PRO MH 56/46.

(119) Ibid.

(120) Ibid.

(121) Minutes of the Third Meeting of the Nash Sub-Committee 21/6/34. PRO 56/46.

(122) Minutes of the Fourth Meeting of the Nash

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Sub-Committee 4/10/34. PRO 56/46.

(123) Ibid.

(124) See footnotes 437 and 438.

(125) In order to help to "locate" the Weekend Review politically it is worth mentioning that in February 1931, an article entitled "A National Plan for Britain", published in the Journal gave rise to the group "Political and Economic Planning" (PEP), which became the main organisation of the planning movement. (For the planning movement see Marwick (1964).) According to one historian PEP "...helped to prepare high-level opinion for the changes of the 1940s." (In allusion to the reforms of the post-war Labour government.) (Addison (1977) 38 - 9.) The debate on the nutrition of the unemployed in the Weekend Review in early 1933, also became a link in a chain of events which also had, at least for the study of nutrition, far-reaching consequences.

(126) On 4th February 1933, a letter in the journal from a Mrs Meynell referred to a case of a mother of seven, whose husband was unemployed, who had died from "pneumonia aggravated by voluntary starvation". The coroner had commented that the 48/- Public Assistance which the family received was insufficient for them to live on. The case was debated by the London County Council, and had already been reported in the national press. The Daily Herald had presented the family with a meal and commented: "...they are a cheerful family and determined to carry on..." (Daily Herald 30/1/33, 44.) Mrs Meynell commented: "The unhappy family and the benevolent Daily Herald ought not to be cheerful. They ought to be angry; angry enough to ask for a verdict of murder against H.M.Government... this family was receiving the maximum reliefs and allowances to which they were entitled..." Mrs Meynell stated that the "...victims of the system... [should] make such an outcry that wage-cutting and dole-cutting should no longer appear the safest and simplest way to deal with the present economic crisis." (Weekend Review 4/2/33, 117.) The following week two letters supported these sentiments, and a week later a contribution appeared from J.C.Pringle, the secretary of the Charity Organisation Society (COS). Commenting on the call for an "outcry", Pringle said that the COS was led, "...by our close contact with many thousands of families to somewhat different conclusions..." According to Pringle, the dole was higher than in 1924 when a member of the Labour Government had described it as "...enough to keep any honest man away from the Poor Law", and that Poor Law Relief was higher than when George Lansbury, leader of the Labour Opposition, had been a Poor Law Guardian before the Great War. The COS opposed "...further advances upon the general levels of relief which satisfied these well-known

Socialists", but was "profoundly convinced" of "...the paramount duty of looking out for the hard cases and succouring them individually, together with sympathetic study of their particular problems and troubles, from voluntary sources." (Weekend Review 18/2/33, 169 - 70.) C.L.Mowatt in his history of the COS before 1914, suggests that the Society "offered an alternative to socialism as a way of realising a better society..." (Mowatt (1961), 1 - 2.) Pringle's remarks, antagonistic as they were to the Labour Party, suggest that Mowatt's assessment was still applicable to the COS of the 1930s. (On the aims of the COS in the 1930s see the Society's "revised... and brought up to date" handbook especially the section "Principles and Methods of Charity", Charity Organisation Society (1931), 31. On the activities of one of the COS's officers from 1930 - 35, see Astbury (1956).)

Lansbury was swift to reply to Pringle's remarks. Lansbury claimed that he had never said that Poor Law Relief was adequate and mounted a scathing attack on the COS: "Mr. Pringle talks of looking after hard cases and succouring them individually; I have seldom been able to discover a case considered hard enough with which the Charity Organisation Society were willing to deal. That Society... exists... to organise charity that it ceases to exist." While the COS emphasised self-reliance, Lansbury proclaimed that in his ideal society "...if there were a shortage, then we should all suffer together... no person would have two homes until every person was able to secure one; no person would be allowed luxurious food until everybody was able to secure the food necessary for sustaining a decent standard of living." (Weekend Review 25/2/33.) The same issue of the Review contained a further three letters which were antagonistic to Pringle, including a reply from Mrs Meynell: "Another official... [of the COS] informed me... that the family, even when in work and battenning on £2.17s a week, exhibited various unamiable qualities (which I forbear to quote) including a tendency to get into debt; and implied that my "kind heart" should concern itself preferably with the fate of "real heros". My correspondent added that "we belong to the class that does not have seven children, especially when both parents are mentally feeble". This exchange between Pringle and Lansbury helps us to see how our scientific actors aligned themselves politically by adhering to their respective positions on the social causes and cures of nutritional problems. The parallels between the politically conservative ethos and mode of operation of the Charity Organisation Society and Cathcart's views are obvious. They both lay stress on the individual circumstances of those in need, the inculcation of a sense of responsibility, and on local voluntary activities rather than state intervention. On the other hand to emphasise the need for state intervention, aligns our actors with the socialists, and this the position taken, for example, by Mellanby.

Besides the overtly political argument between the COS and Lansbury, the Review also published a number of suggestions that the BMA appoint a committee to consider the question of minimum diets. (See this thesis, pages 142 - 3.) On the 11th March an editorial declared that minimum diets was a question for experts: "...as our discussion has proceeded, those who adopt a political approach... find themselves getting more and more out of depth. How much nourishment people need, what it costs them to get it, even the means of arranging for improvement of diet and its distribution are questions on which no ready political solution is possible. These are primarily technical problems, which must be referred to the dietician, the economist, the administrator, and the expert on management." (Weekend Review 11/3/33.) In order to obtain a quicker assessment of the problem than could be done by the BMA, the Weekend Review announced that it would appoint its own expert committee. (Weekend Review 11/3/33, 264, and 25/3/33, 319.) The Committee included A.L.Bowley, Professor of Statistics, London University, Mr.R.H.Davison, a former employee of the Ministry of Labour, Miss E.I.Sproat, an "authority on household budgets", and Mary Nicolson who was said to have "...up to date knowledge of working class conditions" and Mottram. Mottram had already published on the question to be addressed by the Committee. (Mottram (1927).)

As politically conservative opinion, as represented by the COS was antipathetic to the setting of standards, and favoured each case of hardship being treated individually, despite the avowedly apolitical nature of their project, the Weekend Review was aligning itself politically by its quest for the "minimum diet." This was recognized by an article in the National Labour Fortnightly which was referred to by a Weekend Review Editorial of 25/3/33, as "...the Prime Minister's tame pocket book". The National Labour Fortnightly had complained not only that some correspondents in the Weekend Review had used an unfortunate death "...as a text for a sweeping denunciation of the Government..." but also that "...political considerations... underlie..." even those letters which were "...confined... to discussing what is the income necessary to provide a proper minimum standard of subsistence..." ("Exploiting the Unemployed" National Labour Fortnightly 2 (14) 18/3/33, 10 - 11.)

(127) "Hungry England Inquiry: Report of Committee" Weekend Review 1/4/33, 357 - 60.

(128) Ibid.

(129) Carnwath to Newman 4/4/33. PRO MH 56/40.

(130) Ibid.

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(131) This Minute to Newman and Robinson was actually unsigned but was almost certainly from the Minister. "To CMO, Secretary", PRO MH 56/40.

(132) Minutes of Advisory Committee Meeting of 28/7/33. PRO MH 56/46.

(133) The Medical Officer of Health was F.L.Keith. (Med Dir)

(134) Memorandum by Greenwood 15/7/33. PRO MH 56/46.

(135) Ibid.

(136) Cathcart to Hudson 24/7/33. PRO MH 56/46.

(137) The "League of Nations Conference of Experts for the Standardisation of Certain Methods used in making dietary Studies" was held in Rome on 2nd and 3rd September 1931. Cathcart noted in his introduction to the report of the conference that "...the historic 3,000 Calories have been accepted...." He continued: "...the majority of the members of the Conference were definitely of the opinion that 3,000 Calories... as the basal value, even for a man doing a good day's work is definitely high (Probably a figure of 2,700 to 2,800 for the average man would be nearer the mark.) The only defence of the continued use of this figure is that the majority of the studies in the past have been based upon it, and its retention allows some - admittedly indifferent - comparisons of new investigations with the old." (League of Nations (1932a), 478.)

(138) Minutes of Advisory Committee Meeting of 28/7/33, PRO MH 56/46.

(139) Ibid.

(140) Ibid.

(141) Ibid.

(142) Ibid.

(143) Note that this is the first occasion on which we find Cathcart attempting to bolster his position by aligning himself with a clinician. After the controversy with the BMA he increasingly adopted this strategy.

Fleming, G.B. (1882-1952). Education includes: Kings College, Cambridge, Glasgow; University of Vienna; BA 1903, MB 1908; Career includes: Dispensary Physician, Western Infirmary and Royal Hospital for Sick Children, Glasgow; Assistant to Professor of Medicine, Anderson's College of Medicine, 1912 - 14; Lecturer in Medical Diseases of

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Infancy and Childhood 1924 - 30; Professor of Paediatrics 1930. (Succeeding Findlay.) (WW)

(144) Cathcart to Hudson 15/11/33. PRO MH 56/40.

(145) Greenwood to Hudson 21/11/33. PRO MH 56/40.

(146) Carnwath to Magee 2/12/33. PRO MH 56/40.

(147) Magee Minute 13/12/33. PRO MH 56/40.

(148) Ibid.

(149) Minutes of Advisory Committee Meeting 15/12/33, PRO MH 56/46.

(150) Carnwath to Robinson 21/1/34, Robinson to Minister 15/1/34, Minister to Robinson 15/1/34. PRO MH 56/56.

(151) Cathcart to Magee n.d. PRO MH 56/46.

(152) Weekend Review 18/2/33 169. This was the issue of the Weekend Review which contained the letter from Pringle. (See footnote 126.)

(153) Weekend Review 25/2/33.

(154) Weekend Review 4/3/33, 243.

(155) Weekend Review 11/3/33, 264.

(156) "Supplementary Agenda" BMA Science Committee Minutes 10/3/33. The "Supplementary Agenda" mentioned, as evidence of recent interest in nutrition, articles by G.M.M'Gonigle (M'Gonigle 1933) and Crowden, (Crowden (1932)) and argued that in issuing a statement on minimum diets the BMA would be "...associating itself with a health problem of immense public interest and importance, an action not without propaganda value."

(157) The Council meeting which approved the Science Committee's proposal took place on 12/4/33. BMA Council Minutes 1932 - 33, 203.

(158) BMA Science Committee Minutes 10/3/33.

(159) M'Gonigle, George Mura (1888-1939). Qualifications include: MB ChB Durham 1910, MD 1913, DPH, BHy 1914. Career includes: Resident Posts, Newcastle 1910 - 14; Schools Medical Officer, 1919 - 24; Medical Officer, Stockton-on-Tees, 1924 - 39. (Med Dir.) Since 1924, M'Gonigle had taken up several public health issues. (See M'Gonigle's obituaries The Lancet (1939) and British Medical Journal (1939a).) At the time of the formation of

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the BMA Committee he was actively propagating ideas concerning the relationship between housing, nutrition and health. (M'Gonigle (1933).) For several years he had been suggesting that health of slum populations could deteriorate on re-housing due to increased rents which leave less money for food. (See, for example "Nutrition and Housing" (M'Gonigle)" MRC 1741, which shows that Fletcher had considerable sympathy for M'Gonigle's views.)

(160) For Cowell see Chapter Two, footnote 291. Cowell was not an original member of the Committee, but it was resolved at the first meeting that he should be appointed. (Minutes of the First Meeting of Nutrition Committee 28/4/33. BMA Nutrition Committee, File 1.)

(161) Crowden, G.P. (1894-1966). Qualifications and career includes: BSc London 1921; MRCS (Eng), LRCP (Lond) 1925; Lecturer in Physiology, London School of Hygiene and Tropical Medicine, 1929 - 34; Reader in Industrial Physiology 1934 - 45. (WW)

The other members of the Committee were A.L.Bowley who had been a member of the "Hungry England" Committee, G.G.Friend, Medical Officer, Christ's Hospital, West Horsham, Hutchison, (see Chapter Two, footnote 135), and the Officers of the BMA - Lord Dawson of Penn (President), E.K. le Fleming, (Chairman of the Representative Body), Sir Henry Brackenbury, (Chairman of Council) and N.B.Harman (Treasurer). Of these, only Bowley played a significant part in drafting the report. (See footnote 164.)

(162) Minutes of the Second Meeting of Nutrition Committee 18/5/33, BMA Nutrition Committee, File 1.

(163) Ministry of Health (1932a), (1932b).

(164) The Sub-committee consisted of Crowden, M'Gonigle and Mottram, with Bowley, "when the question of translation of foodstuffs into costs is considered." Minutes of the Third Meeting of Nutrition Committee 8/6/33. BMA Nutrition Committee, File 1.

(165) Mr Geoffrey Shakespeare, Parliamentary Secretary, speaking that evening at meeting of the Food Group of the Society of the Chemical Industry, stated with reference to the comment in the press, that "There is not one single word in the BMA Report about the Ministry of Health's conclusion on unemployment and national health... nor are any of its conclusions questioned or doubted." (Press statement 24/11/33, PRO MH 56/55, and Daily Telegraph 25/11/33.) Shakespeare is referring here to the section on nutrition in Newman's Annual Report of the Chief Medical Officer of the Ministry of Health for 1932, which was published in September 1933. The re-assurances of Shakespeare failed to dispell criticisms of the Government.

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On 25/11/3 the Weekend Review attacked the arguments in the official reports: "One of the gains of 1933 is that the nutrition of poor people has been taken to some extent outside the range of party controversy of the old-fashioned type and the principle of scientific measurement asserted. The Committee set up by the Review... had a marked influence in this direction, and the BMA's special committee... has substantially confirmed its findings... It will, we hope, begin a much more substantial forward move. But it would be premature to suggest either that health, education or maintenance authorities are conscious of the new standards which are going to be demanded of them, or that the medical staffs concerned have yet solved the problem of measuring malnutrition by any simple and infallible test. The value of the malnutrition figures worked out to decimal points per thousand children in such publications such as Sir George Newman's Health of the School Child 1932... [This was Newman's Annual Report as Chief Medical Officer of the Ministry of Education] is extremely dubious and our confidence in these returns is not increased by the statement that a rise in the average rate from 9.5 in 1925-29 to 11.2 in 1931 does "not in fact, imply any real increase in malnutrition." After all, the Minister of Health quoted a diminution of as little as 0.5 per cent as evidence that the depression has not aggravated malnutrition." (Weekend Review Editorial 25/11/33, 545.)

(166) Mr. J.J.Tinker, Labour M.P. for Leigh, 1923 - 45.

(167) Parliamentary Debates 283, 1933 - 34, 1030. Tinker's question alleged that the BMA report "...stated that the average unemployed family is not getting enough food to keep it in reasonable health..."

(168) The Parliamentary Secretary of the Ministry of Labour was Mr R.S.Hudson, (1886-1957), M.P. for Southport.

(169) Parliamentary Debates 283, 1933 - 34, 1031. The question was originally handed in on 27/11/33, addressed to the Prime Minister, and appeared on the Order Paper for the following day's proceedings of the House of Commons. However, the Prime Minister wrote to Tinker to tell him that arrangements were being made for the Minister of Labour to answer the question. When Hudson answered Tinker on 31/11/33 Hudson repudiated the claim that the BMA Report stated that unemployed families were underfed, and referred Tinker to Newman's Annual Report of the Chief Medical Officer of the Ministry of Health for 1932.

(170) Labour Party Notes for Speakers on the BMA Report 1/12/33. PRO MH 56/55.

(171) Memorandum Greenwood to Robinson and Newman 30/11/33. PRO MH 56/43.

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(172) Newman to Robinson 4/12/33. PRO MH 56/43.

(173) See this thesis page 133.

(174) Magee to Carnwath. PRO MH 56/48.

(175) Buchan to Newman 30/11/33, enclosing the following letters: Buchan to Dr le Fleming 27/10/33; Fleming to Buchan 31/10/33; Buchan to Fleming 6/11/33; Buchan to Professor R.M.F.Picken, 26/10/33; Picken to Buchan 28/10/33; Buchan to Picken 6/11/33; Picken to Buchan 9/11/33. PRO MH 56/55.

(176) Sir Henry Brackenbury was Chairman of the Council of the BMA.

(177) Sir Robert Bolam was Vice-President of the Association, and former Chairman of the BMA Council.

(178) Newman to Robinson 4/12/33. PRO MH 56/55.

(179) The meeting was attended by the Minister, Robinson, Newman, Carnwath and Hamill. Minute of meeting 11/12/33. PRO MH 56/43.

(180) Ibid.

(181) Minute of Advisory Committee meeting 15/12/33. PRO MH 56/46.

(182) Greenwood cited: Harris and Benedict (1919); Cathcart and Murray (1931); Greenwood and Thompson, (1918) and Benedict et al (1919). Minute of Advisory Committee meeting 15/12/33. PRO MH 56/46.

(183) Ibid.

(184) Memorandum on BMA report by Mottram n.d. but circulated 13/12/33. PRO MH 56/55.

(185) Ibid.

(186) Memorandum by Cathcart on the BMA Report, 13/12/33. Ibid.

(187) For Rubner see Chapter Two, footnote 140.

(188) For an outline of Lusk's work see Deuel (1950).

(189) Memorandum by Cathcart on the BMA Report, 13/12/33. PRO MH 56/55.

(190) Minute of Advisory Committee meeting 15/12/33. PRO MH

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56/46.

(191) Greenwood to Young 18/12/33, PRO MH 56/55, and Ministry of Health (1934a).

(192) H. Robert Topping, General Director of the Conservative and Unionist Central Office to Sir Hilton 12/1/35, PRO MH 56/56.

(193) The protests are located in PRO MH 56/55.

(194) Shakespeare's constituency was Norwich.

(195) KMG to 1. Sir Arthur Robinson, 2. CMO. PRO MH 56/55.

(196) Dr Anderson letter to the Editor. The Times 6/1/34.

(197) Greenwood letter to the Editor. The Times 8/1/34.

(198) Paragraph 17 of The Criticism and Improvement of Diets contains the comment that no account was taken of wastage. Dr Anderson letter to the Editor. The Times 9/1/34.

(199) Paragraph 22 of The Criticism and Improvement of Diets contains the comment that the protein intake suggested is not high. Ibid.

(200) Ibid.

(201) Greenwood letter to the Editor. The Times 10/1/34.

(202) Daily Herald. 11/1/34.

(203) Dawson of Penn, 1864 - 1945. See Watson (1951).

(204) Dawson letter to the Editor. "Diet and Health. Committees at Cross Purposes. A Joint Session Proposed." The Times 11/1/34.

(205) Editorial: "A Wise Proposal" The Times 11/1/34.

(206) MacNalty, A.S. Career includes: Medical Inspector, Local Government Board 1913 - 19, Medical Officer, Senior Medical Officer, and Deputy Chief Medical officer, Ministry of Health, 1919 - 35. Chief Medical Officer, Ministry of Health and Board of Education 1935 - 41. (WW)

(207) Robinson discussed Dawson's proposal with MacNalty rather than Newman because Newman was on holiday at the time. Newman, however opposed the proposal by telegram dated 15/1/34: "Hope Committees will decline Dawson's proposal. They have different references. Arbitration wholly unnecessary. Newman" In a letter written on the same

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day Newman described Dawson's letter in The Times as "egotistic and fantastic", and continued: "Lord Dawson always desires to be in the picture of all things medical, and not having been appointed to either of these committees he proposes himself as arbitrator." PRO MH 56/56.

(208) WAR to Minister 11/1/34. Ibid.

(209) Ibid.

(210) Minute of meeting of Young, Robinson and Greenwood, 11/1/31. PRO MH 56/56.

(211) Ibid.

(212) Young to Mellanby, Hopkins, Cathcart 11/1/34. PRO MH 56/56.

(213) Ibid.

(214) Ibid.

(215) Robinson to Greenwood 11/1/34. Ibid.

(216) Mentioned in Greenwood to Robinson, 12/1/34. Ibid.

(217) Carnwath to Cathcart 13/1/34. PRO MH 56/47.

(218) Mellanby to Robinson 13/1/34. PRO MH 56/56.

(219) Cathcart to Young 15/1/34. Ibid.

(220) Notes prepared by Greenwood included in Greenwood to Robinson 12/1/34. PRO MH 56/56.

(221) Ibid.

(222) Press Notice 18/1/34. PRO MH 56/56.

(223) Cathcart to Carnwath 16/1/34. PRO MH 56/56.

(224) Cathcart to Carnwath 20/1/34. PRO MH 56/56.

(225) Carnwath to Cathcart 24/1/34. PRO MH 56/56.

(226) Carnwath to Newman and Robinson 26/1/34 PRO MH 56/47.

(227) Ibid.

(228) Cathcart to Carnwath 30/1/34. PRO MH 56/47.

(229) Cathcart to Greenwood 31/1/34. PRO MH 56/47.

(230) Greenwood to Cathcart 1/2/34. PRO MH 56/47.

FOOTNOTES TO CHAPTER THREE

(231) Ibid.

(232) Ibid.

(233) Verbatim report of joint conference 6/2/34. PRO MH 56/56.

(234) Ibid.

(235) Ibid.

(236) Ibid.

(237) Ibid.

(238) Ibid.

(239) Ibid.

(240) Ibid.

(241) Ibid.

(242) Ibid.

(243) Ibid.

(244) Ibid.

(245) Ibid.

(246) Ibid.

(247) Ibid.

(248) For an outline of Sherman's life and work see Day, (1957).

(249) Verbatim report of joint conference 6/2/34. PRO MH 56/56.

(250) Ibid.

(251) Ibid.

(252) Robinson to Young 8/2/34. PRO MH 56/56.

(253) Cathcart to Magee 13/2/34. PRO MH 56/56.

(254) Magee to Members of the Joint Conference enclosing a memorandum by Cathcart 14/2/34. PRO MH 56/56.

(255) See this thesis, pages 50 - 1.

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(256) See this thesis, 89 - 90.

(257) See this thesis, 90 - 1.

(258) Verbatim report of second joint conference 27/2/34.
PRO MH 56/56.

(259) Crowden to Magee 15/3/34. PRO MH 56/56.

(260) Magee told Crowden "With reference to our phone talk of yesterday regarding Mellanby's criticisms of the draft, I have contacted Mellanby who has made a constructive suggestion... If you've informed your colleagues of Mellanby's attitude its best to let them know that now all's well." Magee to Crowden 29/3/34. PRO MH 56/56.

(261) On the 9th April Magee sent out an amended version Crowden's document for the approval of the members of the joint conference. On the 16th April he recorded "I saw Hopkins and Cathcart today and discussed the alterations suggested by the BMA. Cathcart objected very strongly and Hopkins supported him. Cathcart promised to write Anderson." Two days later Magee sent out a new version of the document to which minor changes had been made. On 24th April he recorded: "I called an informal meeting of the BMA members to consider Cathcart's objections. Cathcart didn't write Anderson." The following day Magee told Hopkins that the BMA had agreed to changes to meet Cathcart's criticisms, and on 27th April he informed Anderson that Cathcart had agreed. (Magee to Members of the Joint Conference 9/4/34, Notes by Magee 16/4/34, Magee to Members of the Joint Conference 18/4/34, Notes by Magee 24/4/34, Magee to Hopkins 25/4/34, Magee to Anderson 28/4/34. PRO MH 56/56.)

(262) Magee to Anderson 3/5/34. Ibid.

(263) Magee told Carnwath that he had sent the report to Anderson and that members of the conference had taken it for granted that it would be published. Magee to Carnwath 3/5/34. Ibid.

(264) Carnwath to Newman 3/5/34. Ibid.

(265) Newman to Robinson 3/5/34. Ibid.

(266) Newman to Robinson 7/5/34. Ibid.

(267) Robinson to Minister 7/5/34. Ibid.

(268) Ibid.

(269) The Report, (Ministry of Health (1934b)), was sent

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with a circular, (Ministry of Health (1934c)), to County Councils and Sanitary Authorities in England and Wales.

(270) The Report was published in the British Medical Journal of 18/5/34.

(271) Ministry of Health (1934b), 3.

(272) Ibid., 4.

(273) Ibid.

(274) Ibid., 5.

(275) Ibid.

(276) Ibid., 6.

(277) Ibid., 7.

(278) Ibid., 7.

(279) This is an episode alluded to in Chapter Two footnote 277. Mellanby proposed to study "...the proper feeding of 500 pregnant women to see the effect on all the mishaps of pregnancy..." but was told by Fletcher that the Council was "...really in a tight fix about money... [and] 'the proper feeding of 500 pregnant women' suggests enormous expenditure, which we not only could not undertake but in propriety should not undertake." ("Addendum to Memorandum on Proposed Extension of Researches in Human Nutrition", by Mellanby, 25/1/27, MRC 2100 II, Fletcher to Mellanby 7/2/27, MRC 99/6 II.)

(280) Mellanby to Hudson 3/1/34, PRO MH 56/46.

(281) Hudson to Committee Jan '34. PRO MH 56/46.

(282) Mellanby (1933a), 1131. This paper was of a lecture delivered at St. Mary's Hospital, Manchester, 24/10/33.

(283) This point is apparent in Mellanby's reply to the request to participate in the Joint Conference, (page 152, footnote 218), and is also made abundantly clear by Greenwood's comments to Cathcart given below, (page 165, footnote 286.)

(284) Memorandum Greenwood to Robinson 29/1/34. PRO MH 56/47.

(285) Ibid.

(286) Ibid. Greenwood continued: "Mellanby... has the vanity of a child..." and that he was unable to see that

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"...the grown ups, of the Baldwin type, are laughing at him".

Stanley Baldwin: Leader of the Conservative Party, 1923 - 37; Lord President of the Council, 1931 - 35; Prime Minister, 1935 - 37.

(287) Ibid.

(288) Greenwood to Cathcart 30/1/34. Ibid.

(289) Magee to Committee May '34, PRO MH 56/46.

(290) Cathcart to Magee n.d. PRO MH 56/46.

(291) Newman alluded to the much publicised studies of Cory Mann (1926), and Orr (1928).

(292) Minutes of Seventh Advisory Committee Meeting, 7/6/34. PRO MH 56/46.

(293) Ibid.

(294) Ibid.

(295) Ibid.

(296) Greenwood to Young 11/7/34. PRO MH 56/40. Greenwood was junior in age to both Cathcart and Hopkins.

(297) Robinson to Minister 12/7/34. PRO MH 56/40.

(298) While the Committee Against Malnutrition (CAM) and its Bulletin was a means by which left-wing doctors and academics carried on agitational activities around issues of nutrition, Dame Janet Vaughan, a participant in the Committee, told me in a letter: "le Gros Clarke was the prime mover, editor and inspirer of the whole venture". le Gros Clarke was not medically qualified but was a well-respected Communist activist who had been blinded and disabled during the First World War. Janet Vaughan continued her reminiscences of the CAM as follows: "My memory is that we were very informal... many of the people involved were personal friends and involved in activities like Spanish Medical Aid so we often met one another. We were certainly left wing in our outlook but certainly not all I think Party Members." (Vaughan to Smith, personal communication, July 1983. See Committee Against Malnutrition (1937) for a publication of the CAM concerned with the nutrition of Spanish children. Also, the CAM Nutrition Bulletin, 31 (March 1939), refers to a report on the "Food Situation in Spain", signed by, among others, Vaughan.)

Vaughan, Janet (1899 -) Beit Memorial Fellow 1930 -

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33; Leverhulme Fellow, Royal College of Physicians, 1933 - 4; Assistant in Clinical Pathology, British Post-Graduate Medical School 1934 - 9. Scientific interest: anaemias and other blood diseases. (WW)

(299) Committee Against Malnutrition Bulletin 1, (March 1934).

(300) Ibid.

(301) See British Medical Journal (1934a) and Committee Against Malnutrition Bulletin 3 (June 1934). The evidence suggests that Hopkins was a supporter rather than a central figure in organisations such as the CAM. The CAM Bulletin reported that at the meeting Hopkins said that "...it is the outstanding duty of the nation to see that all its people are properly nourished, an even greater duty than slum clearance. He stressed that when the spending power of the poor remains the same, the increase in rents consequent upon slum clearance must lead to underfeeding." The remarks which were reported in the BMJ however cast Hopkins as more of a moderating influence. After his radical comments about housing, income and nutrition, he was reported to have said that the "nutrition movement", "...should avoid all issues which were merely political. A number of highly influential men in Government circles were at the moment very much awake to the necessity of action if the further regression of this nation into a C3 nation is to be arrested; therefore, in respect to political action, he thought they should be a little patient. What had to be done was to remove certain inhibitions - apathy in a few, disbelief also in a few, and ignorance in a great many." There are several further examples of Hopkins's moderating influence during the 1930s. He became President of the Association of Scientific Workers in 1937, and in November 1938 he warned the Cambridge branch of the ASW to "Keep their efforts as free from political bias as possible." (MacLeod (1975) 352, 382.) In a similar vein Hopkins's 1933 presidential address to the British Association Hopkins advocated a "Soloman's House" of scientists, "devoid of politics, concerned with synthesizing existing knowledge and continuous concern with its bearings upon social readjustment." (British Association Reports (1933) 23, and MacLeod (1975) 23.) It may be significant that Hopkins did not chair the second large public meeting of the CAM, his place being taken by Mottram. (See British Medical Journal (1935a).)

(302) See Hopkinson (1954), 136.

(303) Eleanor Rathbone (1872-1946). Member Liverpool City Council 1909 - 34. President National Union for Equal Citizenship, 1919 - 29. Member Executive Committee, League of Nations Union. M.P. (Ind) Combined English Universities 1929 - 46. Author of The Disinherited Family, a Plea for

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Family Endowment (1924), and The case for family Allowances (1940). (WW) See also Stocks (1949).

(304) See "Milk in Schools" in Committee Against Malnutrition Bulletin 1 (March 1934).

(305) An editorial in the British Medical Journal of 22/9/34 refers to the Children's Minimum Campaign Committee publishing a statement entitled Evidence of Malnutrition, which supplemented a statement The Scale of Needs submitted in July by Miss Rathbone to the Unemployment Assistance Board. (British Medical Journal (1934b)). For Unemployment Assistance Board, Gilbert (1970) 181 - 3.) For some further details of CMC activities, see Lewis (1980) 176 - 8.

(306) John Boyd Orr (1880 - 1971). Director, Rowett Research Institute, 1914 - 1945; M.P. (Ind) Scottish Universities 1945 - 6; Director-General of the Food and Agricultural Organisation of the United Nations 1945 - 8. (See Kay (1972a), Orr (1966), Garry et al (1972), and footnotes 309 and 310, for details of Orr's career.)

(307) Letter: "Unemployment Assistance: Determination of Needs" British Medical Journal 4/8/34, 235. The other six signatories were L.J.Harris, E.Farquar Buzzard, J.B.S.Haldane, J.C.G.Ledington, Charles McNeil, Charles Porter and Humphry Rolleston. Editorial: British Medical Journal 13/8/34, 311.

(308) British Medical Journal (1934b).

There were numerous other organisations that were active on issues of food and nutrition during the later 1930s:

In July 1935 the "People's League of Health", (established in 1917 by actress Olga Nethersole (1870-1951)), set up a special committee to investigate the nutrition of mothers, and a year later a deputation of this committee presented their findings to the Minister of Health. (See British Medical Journal (1935b), (1936a), and for some background on the League, People's League of Health (1926), and Lewis (1980), 182 - 3.)

For some other publications and activities see: Political and Economic Planning (1936), McCarrison (1936a), (1937), Standing Joint Committee of Industrial Women's Organisations (1936), New Fabian Research Bureau (1936), Clark (1937), Astor (1937), Engineers Study Group (1936), Crawford and Broadley (1938), British Medical Journal (1939b). The extent of the activity around issues of nutrition may be illustrated by the fact that in May 1938 a provincial conference of the Children's Minimum Committee, held in Newcastle, and addressed by Mottram and Rathbone, was attended by 600 people representing 214 organisations. (See British Medical Journal (1938b).)

After the controversy with the Ministry of Health of

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1933 - 4, the British Medical Association continued to be active on nutrition. The Council of the Association frequently discussed government policies and issued statements which were published in the British Medical Journal, and a cookery book, to give practical effect to the recommendations of the Report of the Nutrition Committee, was published in 1935. The annual scientific meeting in 1936 included, for the first time, a Section of Nutrition. In May 1939 a three day conference was held on "Nutrition in its Wider Aspects". (See British Medical Journal (1935c) British Medical Association (1935), McCarrison (1936b), BMJ Supplement (1939).)

(309) Orr embarked upon a teaching career, spending four years as a pupil teacher, before going to Glasgow in 1899 to study at the teachers' training college, and for an MA at the university. After graduating, and three year's teaching and working in his father's business, Orr returned to University to study Biology and Medicine. He graduated BSc in 1910 and MB ChB in 1912 aged 32. He spent a few months as a ship's surgeon, and as a locum for a GP, during which he was offered, and accepted, a Carnegie Research Scholarship, to work with Cathcart on protein metabolism. (Kay (1972a), 44 - 7.) For Orr's early research with Cathcart see Orr and Cathcart (1914a and b). In 1913, Cathcart had accepted an invitation to go to Aberdeen to establish an animal nutrition research institute, but soon afterwards he was offered a chair of physiology in London. Cathcart took the London appointment and recommended that the job in Aberdeen be offered to Orr. Cathcart's suggestion was followed, and Orr accepted the job. Orr had just started in Aberdeen when the First World War began, and he left for war service. After working as a sanitary officer at army camps in Britain, a medical officer to an infantry unit in France, and a naval doctor, Orr was recalled to London to work on the food requirements of the army. Orr's wartime work included study of the energy expenditure of recruits with Cathcart. (Cathcart and Orr (1919).) He continued publishing papers on energy metabolism in humans during the early 1920s, (e.g. Orr and Kinloch (1921)), before turning to energy metabolism in ruminants. (See, for example Orr and Magee (1924).) After the war, Orr also began to seek further sources of funding for the new institute. The largest donation was made by a businessman called John Rowett and the Institute was re-named the Rowett Research Institute. (Kay (1972a), 51 - 2, 55. For further history of the Rowett Research Institute see Orr (1963), Cuthbertson (1963a).)

(310) Walter Elliot (1888-1958). Education and Career includes: Glasgow University, BSc 1910, MB, ChB 1913; Under Secretary of State for Scotland 1926-29; Minister of Agriculture and Fisheries 1932-36; Secretary of State for Scotland 1936-38; Minister of Health 1938-40; Director of

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Public Relations, War Office, 1941-42. (See Coote (1965) and Orr (1958).)

(311) At the 1922 BMA Conference at which Mellanby, Findlay and Paton clashed, (see this thesis, pages 75 - 7), Orr also contributed to the discussion as follows: "The characteristic feature of rickets is a disturbance of the mineral content of the body. In the production of experimental rickets, therefore, until it is determined that the mineral matter of the diet is adjusted to the mineral requirement... it is premature to discuss the importance of any other dietary factor... In the investigation of any dietary factor... unless the experimental ration contains all the essential minerals in the amounts and in the proportions that they are required, and in a form which they can be utilised, the result with regard to any other dietary factor is bound to be confused." Orr estimated the calcium content of Mellanby's diet and compared it with an estimate of the calcium requirement of puppies and claimed: "In Mellanby's experiment on puppies... the diet contained an absolute deficiency of calcium." Orr was backed up by a similar contribution by Elliot. (See Orr (1922), Elliot (1922).) At the 1924 BMA Conference Orr opened a discussion with a paper entitled "The Importance of the Mineral Elements in the Maintenance of Health". He reminded his audience that he had already pointed out, (referring to the First Annual Report of the Rowett Research Institute), that "...in some of the work on rickets much of the beneficial effect ascribed to hypothetical vitamins is in reality due to the minerals present in the substances given as a source of vitamins... In practice... the adjustment of the mineral balance is of more importance than the inclusion in the diet of substances supposed to be rich in vitamins." (Orr (1924).) According to Orr's autobiography his views on vitamins angered Fletcher, who included an attack on Orr in a draft of an MRC annual report. However, Lord Balfour, President of the Privy Council, suggested that Fletcher should ask Hopkins to visit Aberdeen to examine the work being done there. Orr claims that he quickly convinced Hopkins of the importance of minerals in animal nutrition, and soon Orr was invited to become a member of the MRC's Nutrition Committee. (Orr (1966), 108 and Kay (1972a), 56.) (It seems likely that this refers to an episode shortly before Orr was added to the rickets committee in 1921. (See Chapter Two, footnote 160.) It could also refer to an episode occurring before Orr became a member of the MRC's Committee on Quantitative Problems in Human Nutrition in 1926. (See Chapter Two, footnote 270.))

One of the minerals in which Orr and his colleagues took an interest in was iodine, and in 1929 an MRC Report reviewing knowledge of iodine in nutrition was published. (Orr and Leitch (1929).) This had originally been written as a guide to work at the Rowett. A further MRC report by

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Orr was published in 1931. (Orr (1931).) This work was inconclusive because of inaccurate methods of analysis and Orr was appointed chairman of a new MRC Committee which was charged with devising a more accurate techniques. (See Orr (1931), 3 - 4.) Emphasis on the importance of minerals in the diet continued to be a more prominent in the work of Orr than in the work of our other key actors although it became less important during the 1930s when he began to lay more stress on the need for action to improve the inadequate diets of the poor. (See footnote 315 on Orr's interpretation of his work on milk, and footnote 316 on his interpretation of his work on native diets.)

(312) According to H.D.Kay, the author of Orr's Royal Society biographical memoir, the money which Rowett donated for the purchase of a farm, was, on Orr's suggestion, given on the condition that the Treasury would allow the Institute to follow up any results which had a bearing on human nutrition. (Kay (1972a) 52.)

(313) The establishment of the Empire Marketing Board in 1925 was part of the Tory party's alternative to protectionism, the policy upon which they had fought, and lost the 1923 general election. The EMB aimed to encourage the import of food from the Empire by means of publicity and research. (Coote (1965), 87.)

(314) See Orr (1963), 7 - 10, and Leitch (1963).

(315) This was carried out on schoolchildren in seven Scottish cities and in Belfast for seven months. Corry Mann had already shown the supplements of milk could improve the growth of boys in an institution, (Corry Mann (1926)), but Orr's demonstration aimed to show the value of milk under less controlled conditions. The results of the demonstration were published in a paper in The Lancet in January 1928, which concluded that Corry Mann's findings were confirmed. (Orr (1928).) During this work the dietaries of the families involved were studied, and in September 1930 Orr presented an analysis of their energy, protein, calcium, phosphorus, and iron content. Orr suggested that milk had probably promoted growth in the children because the diets were deficient in protein and minerals. (Orr and Clark (1930).)

(316) The Cabinet Committee of Civil Research (CCR) was established in 1925 to advise the Cabinet on science and economic development. (For CCR, see MacLeod and Andrews (1979).) The CCR appointed a sub-committee on the Mineral Content of Natural Pastures and the second report of this sub-committee, presented to the CCR in April 1926, was prepared by Orr and dealt with medical aspects of mineral deficiency. Orr's paper pointed out the possibilities that existed for the study of the problem among the native

population of Kenya. As a result the CCR decided to establish a Dietetics sub-committee, (of which Cathcart, Fletcher, Hopkins and Orr became members) with the following terms of reference: "To consider and report on the physiological and pathological conditions associated with certain rationed and specialised diets with special reference to Kenya native diets." The work was financed by the Research Committee of the EMB. Two field workers were sent to Kenya. Analysis of the Kenyan foodstuffs, and statistical analysis of the field work, was carried out at the Rowett Research Institute. The work was eventually published as an MRC Report, Orr and Gilks (1931). The report focused on the diets, health and physiques of two tribes, the Masai and the Akikuya. As in Orr's previous work, differences in the mineral content of the diets were again emphasised. The report concluded that the results presented should be considered as a series of preliminary observations, but continued: "...information obtained in investigations of this kind is calculated to hasten the improvement of the physical condition of the native and to increase his importance as an economic factor. From this material point of view alone the continuation of research on the nutritional conditions of natives has shown foresight in promoting such long-range research, which tends to the development of those parts of the Empire with a large native population." (Orr and Gilks (1931) Orr's appeal to the possible economic benefits of nutritional research did not save the EMB Research Grants Committee from being disbanded in 1933, according to Orr because it was felt by civil servants to be too autonomous and informal an organisation. (See Orr (1966), 111.)

(317) See Orr (1966), 111.

(318) The Scottish National Development Council was a body founded in the early 1930s under the auspices of the Convention of Royal Burghs and the Association of County Councils in Scotland. According to the Council's journal it consisted of representatives of "...local authorities... those engaged in industry... men of commerce, of the professions, and of all those who have a stake in the economic life of Scotland." (See Scottish National Development Council (1934a), 65.) The Council aimed, by publicity and research to rejuvenate Scottish industry, and with this in mind, soon after its formation the Council appointed a number of Committees to report on various aspects of the Scottish Economy.

(319) Scottish National Development Council (1934b). The report envisaged that demand could be stimulated if the Agricultural Marketing Boards took over new roles in, and made savings on, the distribution of food. The hope was that both the consumers and farmers could benefit at the expense of the wholesalers. The report was written during

the implementation of the Agricultural Marketing Acts of 1931 and 1933, which from September 1932 was presided over by Elliot, as Minister of Agriculture. The 1931 Act had been passed by the Labour Government in an attempt to alleviate the affects of the economic crisis on British agriculture and rural communities. Under the Act, if two-thirds of the producers concerned were in favour, a Marketing Board for a particular agricultural product could be set up. The Board would have the power to regulate the amount of the product coming on to the market, or to fix the prices paid to farmers. The first Marketing Scheme to be established was the Hops Marketing Scheme in September 1932. In April 1932 a Reorganisation Commission for milk was appointed, which reported in January 1933. The first Milk Marketing Schemes began to operate in late 1933.

(320) For a brief summary of the aims of the 1933 Marketing Act, see Scottish National Development Council (1934b), 29.

(321) See the introduction to Orr (1936) on connections between the Market Supply Committee and Food Health and Income. For Lord Linlithgow (1887-1952) see Laithwaite (1971). E.W.H.Lloyd (1889-1968), Secretary of the Market Supply Committee, presented a preliminary analysis of the results of the Committee's activities to the Agricultural Economics Society in December 1935. (See Lloyd (1936), and for Lloyd, Wall (1981).)

(322) Orr (1934).

(323) An example of this is Mr R.S.Hudson's response to Mr Tinkers allegations based on the BMA Nutrition Committee report. See footnotes 166 - 9.

(324) Orr (1934). He also claimed: "In a recent comparison of children of school age of well-to-do parents and those of poor parents, it was found that 47 per cent of the poor children were below the standard height compared with only 5 per cent of the well-to-do children. The poor children were relatively anaemic... 36 per cent were unhealthy and unfit. With regard to more than half of these cases no cause could be found other than improper or inadequate diet..." (Orr (1934), 12.)

(325) At this time however Orr was not clearly on either side of the divergence in opinion concerning the cause of nutritional problems. He asked "Why does this malnutrition exist when food is so plentiful?" and answered: "There is no doubt that ignorance, improvidence and inefficiency on the part of the housewife is largely responsible, but it must also be attributed to some extent to poverty." (Ibid., 14.) He suggested that further research was required to find out "...to what extent is disease and ill health prevalent in the community attributable to diet?" (Ibid.,

17) and "...to what extent is the faulty diet due to poverty." (Ibid., 18.)

Orr's position was clarified in August 1935 at a session of the Annual meeting of the British Association in Norwich, when his views were in direct contrast with those of Cathcart. A discussion on the economics of diet was held as a joint meeting of the Sections of Physiology and Economics. Cathcart opened the discussion by declaring that it "...is not primarily the lack of means which accounts for much of the faulty diet that exists in this country. Tradition, laziness, prejudice, and false pride between them are in the main responsible..." He concluded with the statement: "Education is the primary need of to-day- how to cook, how to spend, how to carry on the ordinary work of the house. Housewifery is an art and cooking is an art." Orr however, by concentrating in his contribution on the need to tackle the problem of inadequate diets on the basis of a cheap food policy (along the lines advocated by the SNDC) showed his rejection of Cathcart's thesis. (See The Times 11/9/35.)

According to Thomson (1978), Orr's colleague, Isabella Leitch played an important role in shifting Orr's emphasis from ignorance to income. (For Leitch see Thomson (1982).)

(326) See this thesis 180 - 1 on Orr's method in Food Health and Income. Like Mellanby, Orr also appears to have taken little interest in domestic science. Bayliss (1979) makes no mention of Orr or the Rowett in his history of the Aberdeen College of Domestic Science. I could also find no evidence of any links of the kind that existed in Glasgow between the Institute of Physiology and the Glasgow and West of Scotland College of Domestic Science in the Minutes of the School's Governing Body. (RGIT)

(327) There is no evidence, for example, of Mellanby, unlike Hopkins and Orr, ever having associated himself with the Committee Against Malnutrition or the Childrens Minimum Campaign.

As Secretary of the MRC, one of Mellanby's first priorities seems to have been to exert control over the activities of L.J.Harris and the Dunn Nutrition Laboratory. In February 1934 he raised the question of what he regarded as the poor productivity of the Laboratory at a Council meeting, and he was asked to look into the matter with C.J.Martin and Chick of the Lister Institute, and Professor Raper of Manchester University. He told Raper in a letter:

The difficulty is that we are now spending some £4,500 per annum on this laboratory... yet nothing fundamental comes out... There is nobody at the laboratory with any medical, pathological, or physiological knowledge and the result is that Harris occupies the time of his workers in chasing after problems which are under investigation by other workers... This habit of

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Harris's has also created a good deal of discord among other workers in nutrition... in fact the Nutrition Committee [he means the Accessory Food Factors Committee] had unanimously asked me, as chairman, to carry their protest to Fletcher, when he was alive, against this policy of Harris of rushing into publication after following up other people's works...

A "Committee of Management" was established consisting of Martin as Chairman, with Hopkins and Mellanby. A few months later a letter from Mellanby to Martin shows that, according to Mellanby, Harris was not only conducting trivial work on account of having no medical, pathological or physiological knowledge, and was trespassing on the scientific areas of others in the process, but he was also bringing the Medical Research Council into disrepute, by associating himself with "health societies". Mellanby complained that Harris:

...has been broadcasting on the subject of Nutrition and malnutrition, and I wonder whether you had the opportunity to vet his remarks... also... he is going to lecture to Olga Nethersole's organisation... He is associated in this with Bruce-Porter and such folk. It does not seem to me that our efforts for controlling his activities are conspicuous by their success.

(Mellanby to Raper 4/4/34, Mellanby to Martin 9/10/34, MRC 3037 IV. For Nethersole see footnote 308, and Bruce Porter, footnote 05. For Martin Chapter Four, footnote 42.)

After Cathcart's resignation from the chairmanship of the MRC Nutrition Committee, he was replaced by Martin, but despite Mellanby's attempts to stimulate new projects, it continued to be relatively inactive, and a source of disappointment for Mellanby. (See Mellanby to Wills, Waller, McCance and others 5/10/34, Mellanby, minute 22/10/34, Drummond to Mellanby 17/5/35, Mellanby to Drummond 8/5/35, Mellanby to McCarrison 5/5/36. All MRC 2100/1 vol 4.) However when Mellanby spoke publicly, compared with his 1927 "Duties of the state...", he painted a glowing picture of the existing state of affairs. (See, for example, Mellanby's 1938 Harveian Oration on "The State and Medical Research", Mellanby (1938).)

(328) See Chapter Two, footnote 135.

(329) Cathcart and Hutchison spoke together on "Nutrition and Public Health" at a meeting of the Society of Medical Officers of Health in March 1935. See below, footnote 332, and footnote 429.

For a further example of Hutchison's arguments see also the report of a meeting on the "Assessment of Nutrition" of the Section of Epidemiology and State Medicine of the Royal Society of Medicine which was held in January 1935. Here Magee was the main speaker, and

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Hutchison, and also Simpson spoke during the discussion. See Hutchison (1935a), (1935b), (1936).

(330) See this thesis, page 108.

(331) As pointed out earlier, on pages 86 - 7 in Cathcart's surveys, he never discussed "state of nutrition" along similar lines to Hutchison and Rainy (1897), Newman (1910) or Paton and Findlay (1926). He now began to put forward the even broader view of nutrition along the lines of that expressed in Newman (1928). (See footnote 06.)

(332) Cathcart (1935a), 286. Hutchison was the second speaker at this meeting. Hutchison began by making two general observations. First he stated:

...it is impossible to define the subject we are discussing. Like health, nutrition is not a static definite thing; it is something which fluctuates in all of us from day to day, even from hour to hour. There may be optimum nutrition or under-nutrition, or the possibility - which we are very apt to forget - of over-nutrition, but as Professor Cathcart said, there is no yard-stick available whereby we can determine what the true state of nutrition is.

Hutchison distinguished between "primary and secondary malnutrition". Primary malnutrition he said was

...due to something defective in the diet, ...and secondary... [malnutrition] arises from things other than diet.... As a result of a large experience both in hospital and private practice, I have long felt that a large part of the malnutrition of children is of the secondary variety. In the upper classes I see many under-nourished children, whose parents can well afford to get them good and varied food, but the difficulty is that the child will not eat it. Apart from organic disease, the main factor which causes secondary malnutrition is overstrain; the causes are largely psychological. I am certain that many children at school at the present day are living too strenuous lives, and that reacts on the appetite and the vigour of the digestion and produces malnutrition. (Hutchison (1935c).)

Another example in which Cathcart discussed nutrition in similar terms, and in which he referred to Hutchison is the Section of food and diet of the Report of the Committee on Scottish Health Services of which Cathcart was Chairman:

...it is important to note that nutrition is not synonymous with mere food intake, although it is frequently used in that sense. Good nutrition means much more than the effect of the ingestion of food... Numerous other factors, both personal

(e.g. sleep, happiness, recreation, habits) and environmental (housing, occupation, fresh air etc.) contribute to the state of good nutrition. This multiplicity of factors makes it very difficult to assess the part played in nutrition by any one of them... Another and perhaps the major difficulty is that there is not available any objective measure of degrees of nutrition or of malnutrition. There is much to be said for the view of Dr Robert Hutchison that nutrition is a clinical conception... (Department of Health for Scotland (1936), 94.)

(333) A further example of Cathcart's use of a wide clinical concept of nutrition, and of the way in which he dismissed the possibility of widespread malnutrition is his address to the 1935 annual conference of the Scottish Health Visitors Association. He stated:

Nutrition means far more than merely the effects... of the ingestion of an adequate amount of food... food... is not the only important factor. There are many more; some personal, some environmental. Personal ones include sleep, happiness, play, habits, and environmental ones fresh air, housing, work etc.; and finally there is that overlord of all - heredity - standing dimly hidden, little understood, but grim immutable, inexorable in its power...

Having explained nutrition in this way Cathcart later asked "And what of the nutrition of the people at large?", and continued:

So far as the information which is available from the reports of the Ministry of Health in England, and the Scottish Department of Health goes, there is no evidence of wide-spread or grave malnutrition in this country. (Cathcart (1935b), 193 - 4.)

(334) For example he concluded his speech to the Scottish Health Visitors as follows:

Starvation and grave malnutrition may be absent, but there is much bad dieting. The real difficulty to-day in obtaining an adequate balanced diet is not... the lack of financial means but the lack of education, of knowledge how to buy and how to cook... There is no use talking and lecturing about what people should buy and eat... It is very easy to draw up sensational leaflets but, alas, they are of no lasting value... There are many more urgent things to think about. The result of the 2.30 race is of more primary importance... Deeds not words, example not precept, is what is required. The members of your Association hold, in my opinion,

a key position. We can, with time and patience, change the whole trend in health policy. You almost alone of the health agencies of the country have the free entry of the homes, not only have the entry, but, what is even more honourable, are trusted by those who most need help..." (Cathcart (1935b), 195.)

(335) The Health Organisation of the League of Nations was established in 1925 and placed nutrition on its programme in 1928. The early activities concerning nutrition were attempts to standardise methods. In 1931 and 1934 conferences chaired by Mellanby were held on the standardisation of methods of analysing the vitamin content of foods. In 1932 two conferences were held - the conference in Rome chaired by Cathcart, (see this thesis, page 108), and a conference in Berlin to establish means of monitoring the nutritional effects of the economic crisis. During 1934 it was decided to prepare a general report on nutrition which was undertaken by W.R.Aykroyd and E.Burnet, and was issued in the autumn of 1935. This report stressed that nutrition was one of the most important aspects of preventative medicine. The International Labour Office (ILO), another body associated with the League also issued a more general report on nutrition. The ILO report was produced by a committee which included Cathcart among its members, and was presented to the 1936 ILO Conference.

At the 1935 Assembly of the League, following a request by twelve delegations, there was a discussion on nutrition, public health and economic and social organisation. The subject was referred to a Committee to formulate a resolution which was unanimously adopted by the Assembly. A leading light in these proceedings was Stanley Bruce, Australian High Commissioner in London, who made what became a much quoted plea for the "...marriage of health and agriculture." Bruce proposed that an increase in the consumption of certain foodstuffs would stimulate world agriculture and improve the general economic situation. The resolution urged governments to "...examine the practical means of securing better nutrition..." and called upon the Health Organisation to extend its work. This resulted in the appointment of a Technical Commission chaired by Mellanby and of which Cathcart and Orr were members. The Commission appointed two sub-committees - one on energy requirements chaired by Cathcart, and one on vitamins and mineral requirements of which Mellanby and Orr were members. The Commission first reported in December 1935.

Following the 1935 Assembly the League's Council also appointed a "Mixed Committee on the Problem of Nutrition", which consisted of agricultural, economics, and health experts. This body was chaired by Lord Astor, Chairman of the Milk-in-Schools Advisory Committee of the Milk Marketing Board, and Mellanby was the only other British participant. The Mixed Committee produced an interim report

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for the 1936 Assembly, and a Final Report entitled "The Relation of Nutrition to Health, Agriculture and Economic Policy", for 1937. During the remainder of the decade the Health Organisation conducted studies which had been suggested by the Technical Commission, and began to turn its attention to nutrition in tropical and Asian countries. (See League of Nations (1931), (1932a), (1932b), (1933), (1934), (1935), (1936), (1937a), (1937b), (1938), Aykroyd (1933), and Burnet and Aykroyd (1935), International Labour Office (1936).)

(336) See Committee on Nutrition in the Colonial Empire, (1939).

(337) See Lubbock (1963).

(338) See Chapter Four, footnote 137. Also Mellanby (1939) which indicates Mellanby's enthusiasm for research and application in the colonies.

(339) Newman advised Robinson in late September 1934 that A.V.Hill, Foulerton Research Professor of the Royal Society, or Lovatt Evans, Professor of Physiology, University College, London, could be appointed as Greenwood's successor, although he thought that "The most suitable person would be Professor Cathcart but he is an irregular attender and lives in Glasgow," and Robinson put these suggestions to the Minister. A month later Newman repeated his suggestions. (Newman to Robinson 25/9/34, Robinson to Minister 27/9/34, Newman to Robinson 22/10/34. PRO MH 56/40.)

(340) On 15/1/32 the Prime Minister appointed the Committee on Scientific Research as a standing committee of the Economic Advisory Council with the following terms of reference: "To advise the Economic Advisory Council as to the bearings of the reports of its scientific committees and generally as to the scientific questions that might occupy its attention". At the time of preparation of the Report on Nutrition, the Committee consisted of Sir Daniel Hall, (Director, John Innes Horticultural Institution), (Chairman), Sir John Cadman (former Professor of Mining and Petroleum Technology, Birmingham University), Hopkins and Sir Charles Sherrington (Professor of Physiology, Oxford), with Sir Frank Smith, Secretary of the Department of Scientific and Industrial Research, Mellanby, Sir William Dampier, Secretary of the Agricultural Research Council. Mr Francis Hemming, Secretary, and Mr D.H.F.Rickett, Assistant Secretary of the Economic Advisory Council, were joint secretaries of the Committee. These details are included in the preamble of the Second Report of the Economic Advisory Council Committee on Scientific research: "The need for Improved Nutrition of the People of Great Britain." PRO MH 79/342, and MacLeod (1975), 318.

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(341) Robinson to Minister 12/7/34. PRO MH 56/40. Robinson to Minister 13/7/34. PRO MH 79/342.

(342) Ibid.

(343) Second Report of the Economic Advisory Council Committee on Scientific Research: "The need for Improved Nutrition of the People of Great Britain." 30/6/34. PRO MH 79/342. The document was not published although there were several demands for this in parliament. (Parliamentary Debates (Commons) 1934 - 35, 297 2060 - 1, (14/2/35), 302 2027 - 8, (6/6/35) and 304 1112, (17/7/35).)

(344) Newman to Secretary 12/7/41. PRO MH 79/342.

(345) Robinson to Minister 13/7/34. PRO MH 79/342.

(346) This discussion is mentioned in Robinson to Fisher n.d. PRO MH 79/342.

(347) The Chancellor was Neville Chamberlain.

(348) Robinson to Fisher n.d. PRO MH 79/342.

(349) Ibid.

(350) Ibid.

(351) Fisher to Robinson n.d. Ibid.

(352) D.B.Foyer, Minister of Agriculture to A.N.Rucker Ministry of Health, n.d. Ibid.

(353) Ministry of Labour to Ministry of Health, Ibid.

(354) The Secretary of State for Scotland was Godfrey Collins (1875-1936) National Liberal MP for Greenock.

(355) Minutes of Conference of Ministers on Nutrition 6/11/34. PRO MH 79/342.

(356) Ibid.

(357) Stanley Baldwin was Lord President of the Council at this time. (See footnote 286.)

(358) Young to Baldwin 15/11/34. PRO MH 79/342.

(359) A further example of how sensitive an issue nutrition had become by late 1934 is the suppression, by Young, of a study of the diet in a monastery by Magee. This had aimed to shed light upon the problem of minimum diets which had caused the controversy with the BMA. The question of publication of this work was raised again in November 1936

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and in November 1937 it was again rejected on both these occasions. (Hamill to CMO 20/12/34, Robinson to Young 18/1/35, Young to Robinson 19/2/35, Robinson to CMO 20/2/35, Hamill to CMO 21/11/36, McNalty to Secretary 23/11/36, Secretary to Minister 7/12/36, Magee to Hamill 5/11/37, Hamill to CMO 6/11/37, MacNalty to 1. Cross, 2. Hamill, 8/11/37. PRO MH 56/41.) Publication of a survey of Epsom College by Magee was also forbidden in mid-1935. (Hamill to CMO, MacNalty to Hamill 18/6/35. PRO MH 56/42.) The Conservative Party notes for party workers for the 1935 General Election included advice on how to handle the the nutrition issue. (See Conservative Party (1935), and later the Conservative Party formed a Committee on Nutrition. (British Medical Journal (1937).)

(360) Baldwin to Young 25/11/34, PRO MH 79/342.

(361) For Sir Daniel Hall see Orwin (1959), and dale (1956).

(362) Vincent, P.M.'s Office to Rucker 18/12/34. PRO MH 79/342.

(363) Ibid.

(364) Note of conversation with Hall by Young 23/1/35. Ibid.

(365) Hall proposed himself, and his wife, Hopkins, Orr, Sir James Irvine, (Principal and Vice Chancellor of St. Andrews University), Lord Dawson of Penn, (see footnote 09), Lord Moynihan, (Royal college of Surgeons), M'Gonigle, (see footnote 159), Sir Ernest Simon, (Treasurer Manchester University), Mr Henry Mess, (Tyneside Social services), Professor Carr-Saunders (Liverpool University), Mrs Barton, (Women's Co-operative Guild), Mrs Hubbock (Principal, Morley College), Miss Eleanor Rathbone, (see footnote 303), Mr W.R.Smith and Mr J.J.Mallon, (Toynbee Hall, Labour Party). Hall to Young 1/2/35. PRO MH 79/342.

(366) Newman commented on Hall's list to Robinson: "This is indeed a remarkable list of persons to advise the Ministry of Health with regard to the application of modern scientific findings in respect of nutrition, and it is hardly less remarkable as a body to explore the quantitative and qualititative consumption of food of the English people" Newman to Robinson 6/2/35. Ibid. Newman's objections are possibly illuminated by Hall's radical connections. He was President of the Association of Scientific Workers in 1930 and Vice President in 1938. He chaired the ASW fringe meeting at the 1934 British Association meeting in Aberdeen. He was also a signatory of the National Peace Council Statement against Aerial Bombing, (October 1935), and was the author, of a Chapter

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in The Frustration of Science (1935). (See Hall (1935), MacLeod (1970) 360, 344.)

(367) Newman to Robinson 6/2/35. PRO MH 79/342.

(368) As the time to appoint the new Committee drew near Newman asked Robinson what should be done about the old committee. Newman replied: "I think that the best plan is to disband and thank. This is the only clean way of getting rid (if) Mr Mottram and Miss Lindsay, and to them we need to make no explanations about the future." A letter was then sent to Mottram which stated that: "Recently... the Government has decided that the situation calls for a fresh orientation of the inquiry and for the appointment for the purpose of... an Advisory Committee... with a somewhat different nature and purpose..." Robinson to Newman 21/3/35. Newman to Robinson 26/3/35. Young to Mottram 13/4/35. Ibid.

(369) Note to Robinson 21/2/35 on discussion between Young and the Secretary of State for Scotland (Elliot), stating that Lord Eustace Percy (MP for Hastings, Unionist) was to be asked to be Chairman. Percy to Young, n.d. stated: "I am sure that the "pull" in my mind towards the policy aspect of these questions is too strong to make me a safe chairman of what is a purely research committee". Ibid.

(370) Questions were being asked about the publication of the EAC report, and without having settled the future of the ACN, the Government was unable to claim that its recommendations were being investigated. See footnote 343.

(371) Luke, George Lawson Johnston, (1873-1943), First Baron of Pavenham. (WW).

(372) Note to Robinson 11/3/35 recording a meeting between Young and Luke, at which Luke appeared to be doubtful about whether to accept the Chairmanship, and which states that Luke would like to discuss the matter with Robinson. PRO MH 79/343.

(373) Note to Robinson 21/2/35. Ibid.

(374) To "Note to Robinson 21/2/35" was added "C.M.O any observations as to Orr proposal 2/3/35 Robinson", under which Newman wrote: "I submit that it would be "cruelty to animals" to impose fresh burdens upon Sir John Orr..." When Robinson wrote to Sir John Jeffrey of the Scottish Office to give him a provisional list of members of the committee, he observed: "Among them is one Scotchman of the highest repute in this sphere, [Cathcart] and I gather that your Minister desired to add Sir John Orr... As to this I think I ought to say that our CMO is a little anxious about it, feeling that Sir John Orr is much preoccupied and lives in

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Aberdeen, and noting that we are already lucky enough to have on our staff Dr Magee who was formerly his assistant. (Robinson to Jeffrey 20/3/35. PRO MH 79/343.)

(375) Department of Health for Scotland March 35, Ibid., states: I have spoken to Laird of the Department of Agriculture who is also interested in the personel of the committee and we are disposed to think that it would be advantageous if the committee were to include Sir John Orr."

(376) Orr is referring to the Rowett Research Institute, and the work which was published in Food Health and Income. Later in the 1930s a larger-scale survey was conducted from the Rowett which was financed by the Carnegie Foundation. See Harvey (1963).

(377) Orr to Collins 27/4/35. PRO MH 79/343.

(378) Hunter, Physician of the London Hospital was added to the Committee as a "Clinical Dietitian". (Robinson to Newman 21/3/35, Newman to Robinson 26/3/35, Ibid.) The biographical notes on the members of the committee which were prepared for a press release stated that Hunter had "done a good deal of work on dietetics and disorders of metabolism." He did not however take much interest in the work of the Committee, and resigned in 1938. (Hunter to Elliot 29/6/38.)

Bradford Hill, Reader in epidemiology and Vital Statis~~x~~tics of the London School of Hygiene and Tropical Medicine was appointed as a "statistical pundit" to replace Greenwood.

(379) Hall to Young 1/2/35. PRO MH 79/343.

(380) Mrs A. Mary Chalmers Watson. Qualifications and career include: MB, CM, MD, Edinburgh; Senior Physician, Edinburgh Hospital for Women and Children, retired; wife of Douglas Chalmers Watson, Physician Royal Infirmary and Royal hospital for Sick Children, Edinburgh, author of Watson (1910).

Robinson suggested to the Department of Health for Scotland that it might be a good idea to have two women on the committee, and the Department, when nominating Mrs Watson, agreed: "From the political point of view, it may be helpful to have two women." (Robinson to Jeffrey 20/3/35, Department of Health for Scotland, March 35, PRO MH 79/343.) When Mrs Chalmers died in 1936 she was replaced by Sister Ruth Pybus, pioneer dietician of the Edinburgh Royal Infirmary.

Mr J.M.Vallance, Assistant Secretary was also appointed as a representative of the Department of Health for Scotland.

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(381) The representatives of the various Ministries and Boards were as follows: Ministry of Health - Dr J.M.Hamill, Senior Medical Officer and J.N.Beckett, Assistant Secretary (replaced in November 1937 by R.B.Cross, Assistant Secretary); Ministry of Agriculture - R.R.Enfield, Principal Economist; Ministry of Labour - E.C.Ramsbottom, Chief Statistician; Board of Education - Dr J.Allison Glover, Senior Medical Officer. Board of Trade - J.R.Willis, Principal, (later replaced by R.H.King); Unemployment Assistance Board - E.H.T.Wiltshire; Market Supply Committee - E.M.H.Lloyd; Welsh Board of Health - Dr P.W.Wade. W.J.Peete of the Ministry of Health and N.F.McNicol of the Department of Health for Scotland were appointed secretaries of the committee, and Magee was appointed medical secretary. Note that in the reconstituted committee the "outsiders" were outnumbered by civil servants.

(382) Memo to Robinson 27/5/35. PRO MH 79/343.

(383) Daily Herald 4/6/35.

(384) Robinson to Luke 5/7/35. PRO MH 79/343.

(385) Ibid.

(386) Ibid.

(387) The first meeting of the new Advisory Committee meeting took place on 13/6/35, and the second on 10/7/35. At the second meeting, following Robinson's suggestions Physiological and Statistical Sub-committees were established. The Physiological Sub-committee consisted of Hopkins, Buchan, Cathcart, Hamill, Bradford Hill, Hunter, Glover, Mellanby and Watson. The Physiological Sub-committee was asked to "consider the influence of diet on the physique and general health of the people and to report as to the various foodstuffs which should be consumed in order to maintain health." The Statistical Sub-committee of Orr, Barton, Cathcart, Enfield, Bradford Hill, Lloyd, Ramsbottom, Willis and Wiltshire was asked to "review existing information as to the various foodstuffs consumed by the people including information as to the effect of price on consumption", and also to decide on what and how further information should be obtained. At the first meeting of the Statistical Sub-committee Orr was elected Chairman and it was decided to establish a Food Consumption Statistics Sub-Committee (FCSSC) of Lloyd, Enfield, Ramsbottom, Bradford Hill, Magee and McNicol, the remit of which was to examine the data prepared by Lloyd for the Market Supply Committee. At the Third Meeting of the Advisory Committee, which took place in November 1935, it was decided to re-constitute the FCSSC as a Statistical Sub-committee, and the original Statistical Sub-committee

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under Orr became the Economic and Social Sub-committee. The Third Advisory committee meeting also passed resolutions which were sent to the Minister pressing for certain comprehensive budgetary and dietary surveys to be undertaken. (Minutes of First, Second and Third Advisory Committee Meetings, and Minutes of First Statistical Sub-committee meeting, PRO MH 56/49.)

(388) See Ministry of Health (1936). This report arose from a suggestion by Mellanby for report on the nutritive value of milk at the third meeting of the new Advisory Committee in November 1935. This was referred to the Physiological Sub-committee, and the resultant memorandum was approved by the fifth meeting in February 1936. Orr, Lloyd and Enfield, also produced a report on economic and social aspects of milk production and distribution for the statistical sub-committee. Luke however told the Minister of (now Sir Kingsley Wood - see footnote 404) that this would not be submitted formally, "...in case it should prove to be an embarrassment rather than a help." (Minutes of the Third, Fourth and Fifth Advisory Committee meetings, 19/11/35, 21/1/36 and 4/2/36, PRO MH 56/49. Also Luke to Wood 29/1/36, 6/2/36, PRO MH 79/344.)

(389) Ministry of Health (1937).

(390) Bowley, A.L. (1869-1957) Lecturer in Statistics at the London School of Economics and Political Science from 1895. Professor of Statistics, LSE 1919 - 36. See Allen (1971).

(391) See page 108 and Chapter Two footnote 306.

(392) R.B. Cross, Assistant Secretary of the Ministry of Health, and representative of the Ministry on the Committee from 1937, reported to the Permanent Secretary (now Sir George Crystal) in January 1938: "At present there is a more or less agreed scale in terms of calories and also one (rather less than more agreed) as regards protein. One or two research workers (e.g. Stiebeling of the U.S.A.) [see footnote 397] have gone further and laid down a scale of optimum requirements for some, though not all, other nutrients. The League of Nations Technical Commission have recently considered the matter, but have failed to reach agreement. Therefore, as matters stand, there is no available yard-stick by which the adequacy or inadequacy of any diet (even in terms of nutrients, still less in terms of actual foods) can be measured. One can only hope that some more authoritative guidance may be available by the time that the facts elicited by the enquiries... [underway] have been analysed and conclusions, perhaps, tentatively reached as to the food consumption of the nation's 10,000,000 families." (Cross to Secretary 13/1/38. PRO MH 79/343.)

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(393) See Orr (1966), 116.

(394) On February 13th 1936, Mr Tom Johnston, Labour MP for Stirling and Clackmannan asked Elliot the reason for the delay in publishing the report of the Market Supply Committee. Elliot denied that there was any report, and referred to Lloyd's paper, given in a private capacity to the Agricultural Economics Society. (See Lloyd (1936) and British Medical Journal 1936b.)

(395) See Orr (1966), 117.

(396) See Orr, (1936), 33 - 6.

(397) See Stiebeling (1933).

(398) See Orr (1936), 33.

(399) Ibid., 12, 36.

(400) Ibid., 52.

(401) Ibid.

(402) Ibid., 49.

(403) Food, Health and Income was the main subject of, for example a debate in the House of Lords 18/3/36. (See British Medical Journal (1936d) and a debate in the House of Commons on 8/7/36. (See footnote 406.)

(404) It was announced in Parliament by Mr Baldwin on March 16th that Food Health and Income would be referred to the Advisory Committee. (British Medical Journal (1936c).)

Wood, Kingsley (1881 - 1943) Unionist. Parliamentary Private Secretary to the Ministry of Health 1919 - 22. Parliamentary Secretary to the Ministry of Health 1924 - 29. Minister of Health 1935 - 38.

(405) Sixth meeting of the Advisory Committee of 30/3/36. PRO MH 56/49.

(406) The motion was moved by Mr Tom Johnston, who as well as quoting Orr, referred to McCarrison (1936a), M'Gonigle and Kirby (1936), Women's Labour Party, (1936) Corry Mann (1926), and attacked various measures which were designed to limit production and to maintain prices of food. In his reply Wood echoed the views of Newman, Cathcart and Hutchison that malnutrition is not only due to lack of food:

Malnutrition is a word much used to-day and much abused. Few take care, and many refrain, when using it, to explain its true and full meaning, and the terms of this Motion, with its

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implication that malnutrition is solely concerned with lack of food, is one more example of how a problem largely scientific and economic can be twisted and turned for other purposes.

He referred directly to Cathcart and Hutchison when turning to the question of whether poverty or ignorance was the cause of malnutrition:

We often hear Sir John Orr quoted rather incompletely, but there is an equally eminent member of the Ministry of Health Committee who can... be regarded equally as an authority, and that is Professor Cathcart. He says that malnutrition is due not so much to poverty as to ignorance and other causes of the same kind; and another doctor equally entitled to be considered when we quote these authorities, Dr. Robert Hutchison, the President of the Royal Society of Medicine, asserts that diseases of over-nutrition are increasing while those due to under-nutrition are decreasing.

Wood also told the House that the ACN had informed him that "...the available data regarding the consumption of various kinds of food in this country are insufficient to justify any safe and far-reaching conclusions, and they have recommended that further information in relation to family budgets should be collected", and quoted a passage from Food, Health and Income, which referred to the need for more information. Wood also quoted figures, as his predecessors had done during the earlier 1930s which showed that the general health and physique of the population was improving despite the economic depression, and referred to the provision of cheap milk for schoolchildren under the 1934 Milk Act. He finally quoted articles from the left-wing newspaper Forward. The first article stated that "every effort should be made to interest the Annual Conference of the Labour Party on the subject" of nutrition and that no issue "...excepting peace and war is more vital or more urgent to Socialism." The second article recommended Orr's book "to those who see in nutrition one of the great channels of Socialist propaganda." He concluded: "The Socialists are asked to take an interest in nutrition because it is important to Socialism. I ask the House to reject the Motion, associated as it evidently is with party ends." During the long debate which followed, the motion was amended in order to welcome the interest being taken in the problem of nutrition and to approve the steps already being taken by the Government.

The strategy adopted here in defence of the government was used during the rest of the 1930s, and included the following elements: Firstly, malnutrition was a complex condition and was not necessarily associated with lack of food; secondly, some experts believed that ignorance was a more important causal factor than poverty; thirdly, more

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information was required before an accurate picture of the situation could be obtained which could form the basis for remedial action; fourthly, the health and the physique of the population was steadily improving; fifthly, those who challenged the Government's record on nutrition were falsifying the truth in order to make left-wing propaganda.

(See Parliamentary Debates (Commons) 314 (1935 - 6), c 1229 - 1350.)

(407) Cross to Secretary 13/1/38. PRO MH 79/343.

(408) Ibid.

(409) Ibid.

(410) Cross means by this, the conclusions of Food, Health and Income.

(411) Cross to Secretary 13/1/38. PRO MH 79/343.

(412) At an Advisory Committee meeting as early as January 1936, Mellanby complained with reference to the progress of the Physiological Sub-committee: "We are in a very awkward position... we have so many passengers... there is practically nobody... of any repute..." Cathcart and Hopkins had not been attending Physiological Sub-committee meetings, and Orr, who had previously only been a member of the Economic and Social Sub-committee was therefore co-opted onto it. (Minutes of Fourth meeting of the Advisory Committee, 21/1/36.) In June 1938, when accepting re-appointment to the Committee for a further three year period, Cathcart told the Secretary of State for Scotland: "I accept re-appointment as a member of the advisory committee quite frankly without any great pleasure. The Committee is far too large and too mixed." Hunter resigned at his time and Hopkins attempted to resign but was persuade not to by Elliot. (Cathcart to Secretary of State for Scotland 29/6/38. Hopkins to Elliot 28/6/38 and 5/7/38, Elliot to Hopkins 4/7/38, and 6/7/38, Hunter to Elliot 29/6/38. PRO MH 79/343.)

(413) Minute Peete to Cross 6/9/38. PRO MH 79/343.

(414) See footnote 308.

(415) Luke to Cross 24/4/39. Ibid.

(416) Butcher to Magee, Lethem and Lindsay 25/7/41, Wrigley to Lindsay 29/7/41, and other notes PRO MH 79/343.

(417) See this thesis, pages 103 - 5.

(418) See this thesis, pages 121 - 2.

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(419) See this thesis, pages 126 - 7.

(420) See this thesis, page 128 - 9.

(421) See this thesis, page 129.

(422) See this thesis, page 135.

(423) See this thesis, page 140.

(424) See this thesis, pages 152 - 60, 165.

(425) See this thesis, page 165.

(426) See this thesis page 123.

(427) See this thesis, pages 108.

(428) See this thesis, pages 147 - 9, 152 - 4.

(429) In his speech to the Medical Officers of Health, for example, Cathcart stated:

There is a tremendous amount of loose talk about the energy value of food consumed, or calories. As if there were any virtue in calories! Calories are only useful units of measurement. They have no nutritive value. And the endless squabble that has been going on recently about this or that level of calorie intake is, in the main, futile. (Cathcart (1935a), 287.)

Similarly, when speaking to the Scottish Health Visitors Association, Cathcart remarked:

The diet... must be adequate in actual quantity or amount, i.e., it must contain a sufficiency of material to satisfy the body's needs. This assessment is usually stated in calories. But it must not be forgotten that no hidden virtue resides in calories. Calories are but units of heat and do not necessarily indicate food value. Coal and strychnine have both caloric value, but would not be regarded as food even by the most credulous of faddists. (Cathcart (1935b) 193.)

(430) See this thesis, pages 129 - 30.

(431) See this thesis, pages 164 - 6.

(432) See this thesis, pages 166 - 7.

(433) See footnote 412.

(434) Note that occasionally Mellanby remarked that the "protective foods" were the more expensive, and that the poor could not afford to buy them. However, unlike Orr,

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beyond stating that there was a need for universal dosing of children with cod liver oil, and some other similar measures, Mellanby made no attempt to formulate and pursue policies to remedy the problem. He rather stated that such matters were not his concern. (See, for example Chapter Two, footnote 310.)

(435) See footnote 334.

(436) See this thesis page 172, and footnotes 329 and 332.

(437) See footnote 406.

(438) See Cathcart (1938) .

(439) Ibid., 86.

(440) Ibid., 86 - 7.

As might be expected, glowing references to the German approach to national fitness didn't appear in Cathcart's later publications, but in Communal Health, a booklet that Cathcart contributed to the "British Way" series in 1944, the stress on moral factors and de-emphasis on food continued. In this pamphlet Cathcart was also greatly concerned with eugenic issues, an interest which had been hinted at but only occasionally made explicit in the past. (For explicit references to eugenics see Cathcart (1933), and for subtle references to hereditary factors in "nutrition" see footnote 333.)

In Communal Health Cathcart noted "A great deal has been written about the... shortcomings of the state in connection with the preservation of health... of the people.... The suggestion is that the powers-that-be have been laggard in taking cognizance of the urgent need of improving the lot of the lower paid members of the community." However, according to Cathcart, the "black spots" were not always "to be ascribed to dilatoriness on the part of authorities. The people themselves have also to share the blame. Many are careless, indifferent and ignorant. They do not realise, to take a simple example, the many dangers to communal health of environmental and personal lack of cleanliness." Later in the pamphlet, in omitting a discussion of food he explained:

The discussion of ways and means regarding the provision and utilisation of food has been perhaps overdone at the expence of the equally important housing problem. It seems to be forgotten by many that sleep and fresh air are just as essential for the general well-being...

But he discussed the problems and solutions to the fall in population at length. He suggested:

...a monetary prize [for having children] of uniform value for all social strata would... be futile. Such a prize might... stimulate

reproduction at the lowest level, a level where the reproductive rate is generally already high ...monetary rewards might help to stay the fall in the population by producing the requisite quantity of children; but what about the quality... If it be something more than quantity that is required then the stimulus which will evoke the desire to respond will require to be one which appeals both to the reasons and emotions of the best type of potential parents... The call [to bear children] must be something much more intangible [than financial rewards] it must be based on spiritual or religious grounds... a call which would arouse in the hearts of the young some sense of values other than material ones, some vision of greatness that will capture their imagination, some true appreciation of reality, some overpowering positive faith which is now deeply buried.

. In keeping with this moral theme Cathcart went on to condemn "ill-spent leisure" which he described as "the handmaiden of social vices like drinking, gambling and immorality" and suggested that watching football or racing were dubious pastimes because the "motive which takes so many... to these exhibitions is in the main the desire for excitement and very frequently to put money on the event". Worse still however was spending "hours in a 'movie' in order to live in a land of make-believe, of shoddy luxury and often of indifferent morality". Cathcart recommended instead the fresh air, and "real interest and real excitement" obtained by keeping an allotment, and for young people, organisations like the Youth Hostels Association, the Keep Fit Movement, and the W.E.A. He concluded the pamphlet with an attack on "planning":

The popular word today is planning. It is altogether too popular and it is dangerous. No doubt the order implied in the word is dear to the bureaucratic mind. It is forgotten that all men are not alike in their interests and desires. Of course there must be order, there must be planning of some kind, but it should be limited to conformity with a reasonable standard of communal behaviour. The one thing, above all others, not to lose is the sense of freedom. Freedom is precious; it does not connote licence. There is a very real danger that it is overlaid and killed. A world run on strictly bureaucratic or scientific basis could be guaranteed to destroy initiative. Petty officialdom is anti-pathetic to the British way of life, living and growth, and the spirit of service.

The "British Way Series", which included a booklet devoted to an attack on planning in science represented one of the opening shots in a struggle between those who favoured and

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those who opposed fundamental changes in the post-war world. We will see in Chapter Five that this struggle was an important part of the context of the post war institutional development of nutrition. (See Cathcart (1944), 3, 31 - 2, 37, 46 - 8. and Trueman (1943).)

(441) See this thesis, page 111.

(442) See this thesis page 108, and footnote 335.

(443) See this thesis pages 92 - 3.

(444) See this thesis, page 93.

(445) The last publication arising from Cathcart's work for the military appeared in the early 1920s. Cathcart remained Chairman of the Industrial Health Research Board until 1940, but the Committee through which he made his scientific contributions - the Physiology of Muscular Work Committee was last listed in the 1936 -7 MRC Annual Report. Cathcart's last original work for the Board was published in 1935. (Cathcart et al (1935).) The re-analysis of earlier work in terms of actual food consumed published in 1936, and the survey of diets in the Scottish Highlands and Islands published in 1940 were concerned less with the quest for new estimates of energy requirements than the earlier surveys had been. In addition these last two publications, for the first time, discussed the level of consumption of "protective" foods and the vitamin content of the diets. (Cathcart and Murray (1936), Cathcart, Murray and Beveridge (1940).)

(446) During the first decade of the Twentieth Century improvements in child welfare were introduced after the alarm caused by the condition of recruits for the Boer War. During the second and third decades, feminist agitation was partly responsible for the establishment of the Ministry of Health and the further development of the maternity and child welfare services by the Local Authorities. During the fourth decade there was, as we have seen, the allegations of widespread malnutrition and as a limited response by the state the various free and cheap milk schemes that were introduced. During the fifth decade, the National Health Service was established. None of these reforms were introduced unopposed. (See, for example, Gilbert (1966), 59 - 101, Dyhouse (1978-9), Davin (1978), Lewis (1980), Dwork (1984), McCleary (1935), Wilson (1936), Willcocks (1967), and Eckstein (1958).)

(447) See Chapter Two, footnote 239.

(448) See this thesis, pages 66 - 7 and footnote 327.

(449) See this thesis page 155.

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(01) War was declared on the 3rd September, and the Ministry of Food was established on the ninth. The first Minister of Food was William Shepherd Morrison, Conservative M.P. for Cirencester and Tewkesbury Division of Gloucestershire since 1929. He had been Minister of Agriculture and Fisheries since 1936, and in April 1940 he left the Ministry of Food and became Postmaster-General. (WW) The Food Policy Committee was a Committee of Ministers which was initially set up during the last week of November 1939, as a Sub-Committee of the Home Policy Committee of the War Cabinet. The new Committee was established following a suggestion by the Prime Minister, Neville Chamberlain, and was chaired at first by Sir Samuel Hoare, who was Lord Privy Seal at that time. In May 1940, when Churchill became Prime Minister, the Food Policy Committee was reconstituted as a full Committee of the War Cabinet. (Hammond (1951), 58 - 59.)

(02) Hammond (1951), 219 -20.

(03) For Elliot's career details see Chapter Three, footnote 310.

(04) "Wartime Food Policy". "Notes by by Dr H.E.Magee on the views expressed by an informal meeting of physiologists who are members of the Advisory Committee on Nutrition set up by the Ministry of Health and the Secretary of State for Scotland held on 18th October 1939." PRO MH/374.

(05) Hopkins and Luke did not attend the second meeting, but in addition to Cathcart, Orr, Mellanby and Magee, the Minister of Health and the Secretary of State for Scotland were present. "Note on an Informal Conference called by the Minister and the Secretary of State for Scotland and held on the 19th December 1939." PRO MH/374.

(06) The Secretary of State for Scotland at this time was David John Colville, Unionist M.P. for North Midlothian since 1929. (WW)

(07) It had been decided, for example to be more generous with the fat ration; margarine, at least for the time being, would not be subject to rationing. "Note on an Informal Conference called by the Minister and the Secretary of State for Scotland and held on the 19th December 1939." PRO MH/374.

(08) Questions were being asked in Parliament. On 15th November, for example Morrison's Parliamentary Secretary, (Mr Lennox-Boyd) was asked whether "special arrangements will be made for delicate persons and invalids to obtain additional allowances". (Parliamentary Debates (Commons) 353 708.)

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(09) In the MRC Report for 1939 - 45 for the wartime period Mellanby celebrated the work of this Committee. It had become known as the "Food Rationing (Special Diets) Committee", and considered the health effects of rationing in general rather than just how special diets were to be maintained. See "The Work of the Food Rationing (Special Diets) Committee." in Medical Research Council (1947), 113 - 27.

(10) "Note on an Informal Conference called by the Minister and the Secretary of State for Scotland and held on the 19th December 1939." PRO MH/374.

(11) The full terms of reference of the new Committee were: "to consider and advise upon problems of national food production with special regard to the shipping and foreign exchange likely to be available for imports of food and animal feeding stuffs and the labour and other resources likely to be available for home production." (See British Medical Journal (1940).) For some details of the circumstances in which the Scientific Food Committee was established see Hammond (1951), 220. For some details of the activity of the Scientific Food Committee see Hammond (1951), 93 - 4.

(12) Bragg, William Henry (1862 - 1942) Education Includes: Trinity College Cambridge. Career includes: Professor of Physics, University of London 1915 - 23. Professor of Chemistry, Royal Institution, 1923 - 42. (WW)

(13) The Deputy Chairman of the Scientific Food Committee was Sir Alan Garrett Anderson and besides Cathcart, Mellanby and Orr, the other members were A.W.Ashby, Professor of Agricultural Economics, Aberystwth, Mr Henry Clay, former Economic Adviser to the Bank of England, F.L.Engledow, Professor of Agriculture, Cambridge, J.A.Scott-Watson, Professor of Rural Economy, Oxford, and D.S.M.Watson, Member of the Agricultural Research Council. (British Medical Journal (1940).)

(14) S.K.Kon. Education includes: PhD inorganic chemistry 1923. Career includes: Assistant to Casimir Funk, State School of Hygiene, Warsaw; Rockefeller Fellowship - one year in England with Drummond and Hopkins, two years in the USA 1927 - 30; Assistantship 1930, Head of Biochemistry and Physiology, 1936, (later nutrition), Department National Institute for Research into Dairying, Reading. (WWBS)

(15) For some notes on the history and work of the NIRD see Dairying and Animal Products Committee (1938).

(16) Sinclair to Orr 17/6/41 (NS Beginnings 1941) mentions that the Informal Conferences were held at "monthly intervals".

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(17) Agendas of Fifth and Sixth Meetings 18/1/41 and 22/2/41. (DS ICNW.)

The papers discussed were:

(18) "The influence of cooking and canning on the vitamin A content of food" by Miss K.H.Coward, "The influence of cooking and canning on the vitamin B1 content of food", by Professor R.Peters, and "Loss of vitamin C on storage and domestic cooking of fresh fruits and vegetables", by R.J.L.Allen, E.M.Hume, and L.W.Mapson. (DS ICNW.)

(19) This was Dr F.Kidd, Head of the Low Temperature Research Station, Cambridge, 1934 - 47, Director Food Investigation Board, 1947 - 57. (WWBS)

(20) Minutes of the Fourth Informal Conference of Nutrition Workers. (DS ICNW.)

(21) Miss K.H.Coward, Professor J.R.Marrack, Dr T.Moore, and Kon were appointed. Ibid.

(22) "The Provitamin A Value of Carotene. Joint conclusions and recommendations" by Coward, Kon, Marrack and Moore. (DS ICNW.)

(23) "Dried Skim (or Dried Separated) Milk as a Foodstuff in War Time" by H.D.Kay, Director of the NIRD, and T.F.Macrea, Lister Institute. (DS ICNW.)

(24) Ibid.

(26) W.P.Kennedy. Education includes: Edinburgh and Glasgow Universities. Career includes: Lecturer in Physiology, Edinburgh University; Professor of Physiology, Bagdad; Medical Officer, Ministry of Health. (Med Dir)

(26) Minutes of the Fourth Informal Conference of Nutrition Workers. (DS ICNW.)

(27) H.D.Kay (1893-1976). Education: Universities of Manchester, Cambridge. Career: Biochemist, London Hospital, 1925; Professor of Biochemistry, University of Toronto, 1931; Research Professor, University of Reading and Director NIRD 1933-58. (WW)

(28) Drummond, Jack (1891 - 1952). Education includes: East London College 1909 - 12, BSc Chemistry. 1912. Career includes: Research Assistant, Department of Physiology, King's College, London 1912 - 13; Research Assistant, 1914 - 18, Physiological Chemist, 1918 - 19, Cancer Hospital Research Unit; Research Assistant 1919 - 20, Reader in Physiological Chemistry 1920 - 22, Professor of Biochemistry 1922 - 45, University College, London; Scientific Adviser, Ministry of Food 1940 - 46; Fullerian

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Professor of Physiology, Royal Institution, 1941 - 44; Director of Research, Boots Pure Drug Company 1946 - 52.

Before Drummond was employed in the Ministry of Food he had long been concerned with the application of nutritional knowledge, having been involved in the "Peoples' League of Health" (see Chapter Three footnote 308), since it was founded in 1917. He was appointed "Chief Adviser on Food Contamination" to the Ministry in October 1939, and "Scientific Adviser" in February 1940. (F.G.Young, (1954).)

(29) Minutes of the Fourth Informal Conference of Nutrition Workers. (DS ICNW.)

(30) Minutes of fifth meeting of Informal Conference of Nutrition Workers 15/1/41. MRC 2100/1a.

(31) Ibid. The fourth meeting was attended by Miss H.Chick, Miss E.M.Hume, Miss A.M.Copping and T.F.Macrae, (Lister Institute), L.J.Harris, T.Moore, E.M.Cruikshank, L.W.Mapson and J.Yudkin, (Dunn Nutrition Research Laboratory), F.Kidd and R.J.L. Allen, (Low Temperature Research Station), P.W.Kennedy, (representing Magee of the Ministry of Health), H.D.Kay, S.K.Kon, Miss K.M.Henry, S.Y.Thompson and Mrs E.H.Mawson (NIRD), Miss K.H.Coward, Miss H.M.Bruce and Mrs E.W.Kassner (Pharmacological Society), and J.R.Marrack, (Pathology Dept, Haymeads Emergency Hospital), S.J.Cowell, (University College Hospital Medical School), A.L.Bacharach (Glaxo) and A.C.Frazer (Department of Pharmacology, Medical School, Birmingham). Apologies were received from Professor R.Peters and H.M.Sinclair of (Biochemistry Dept., Oxford University), Professor A.St.J.Huggett, (Department of Physiology, St Mary's Hospital Medical School) J.Drummond, (Scientific Adviser to the Ministry of Food), B.S.Platt (MRC and Scientific Food Committee) and H.E.Magee, (Ministry of Health), and Orr. The fifth meeting was considerably depleted, being attended by only Copping, Macrae, from the Lister Institute, no-one from the Dunn, Marrack, St.J.Huggett, Bacharach, Coward, Bruce, Kassner, Kon, Miss K.M.Henry, Mrs E.H.Mawson, J.C.D.Hutchinson, (School of Agriculture, Cambridge) N.W.Pirie, E.M.Crowther, (Rothamstead Experimental Station). Apologies were recorded from Orr, Peters, Sinclair, Chick, Hume, Harris, Moore, Kidd, McCance, Cowell, Frazer, and Kay.

(32) In September 1939, when Orr wrote to Mellanby suggesting that a committee be formed to advise the Government on wartime food policy, (Orr to Mellanby 11/9/39 MRC 200/1 vol 5), Mellanby replied: "...there is nothing wrong with the initiative in this office [MRC HQ] as regards the use of the advice of the [MRC] Nutrition Committee. Where we fail... is to get action on the part of other Government Departments... I spend a good deal of my time barging into these people and telling them what they ought to do, but they seldom take my advice. I am in touch

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with Morrison [The Minister of Food]". (Mellanby to Orr 18/9/39. Ibid.) Martin, (see footnote 42)- told Drummond (see footnote 28) who had stimulated Orr's letter to Mellanby (Orr to Mellanby, Martin to Mellanby 20/9/39, MRC 200/1 vol 5), that the MRC had "intimated to the Ministry of Health, the War Office and other Government Departments concerned with food that it is at their service ... Mellanby ...is in touch with the officers in the various Government Departments concerned with our food supply and is hopeful that they will make a practice of appealing to the MRC." (C.J.Martin to Drummond 20/9/39 MRC 200/1 vol 5. See also Minutes of Accessory Food Factors Committee Meeting 5/1/40. MRC AFFC Minutes.)

(33) For more evidence on this point see also footnotes 61 and 213, and pages 219 - 20.

(34) The first indication of Mellanby's displeasure with the activities of the Informal Conferences appears in the Minutes of an Accessory Food Factors Committee meeting of October 1940, where under the heading "Utilisation of Research Workers in Nutrition in Wartime Needs" it is mentioned that Coward "described a movement by Dr Kon, who had raised the question, on his own behalf and that of other workers, whether more direct use could not be made of their energies for work on problems of immediate national importance." However it is recorded that Mellanby, who was Chairman of the Committee thought that the AFFC "...provided a suitable intermediary between nutrition workers and the authorities and hardly saw the need for activity on the part of another group." (MRC AFFC Minutes.)

(35) Platt, Benjamin Stanley (1903 - 69). Education and Career includes: Leeds University and Medical School; Associate in Medicine and Head of Department of Medicine, Henry Lester Institute of Medical Research, Shanghai 1932 - 38; Senior Member of Central organisation for the Co-ordination of Nutritional research in the Colonial Empire 1939 - 42; Director of Nutrition Survey Unit (Nyasaland) 1939 - 40; Joint Secretary Scientific Food Policy Committee of the War Cabinet 1940 - 45; British representative, Hot Springs Conference, 1943. Professor of Nutrition University of London and Head of Department of Human Nutrition, London School of Hygiene and Tropical Medicine. (WW)

(36) Hume, E.M., Member of staff, Lister Institute, 1916 - 61.

(37) For Harris see Chapter Two, footnote 272.

(38) Zilva, S.S., Member of staff, Lister Institute, latterly as Head of the Group for Research on Human Nutrition, 1914 - 50.

(39) Mellanby to Platt, Harris and Hume and to Miss Chick and Dr Zilva for information, 18/2/41. MRC 2100/1a.

(40) Harris to Mellanby, 20/2/41. MRC 2100/1a.

(41) Zilva to Mellanby, 20/2/41. MRC 2100/1a.

(42) Martin, Charles James (1866 - 1955). Education includes: King's College, London; St. Thomas's Hospital. Career includes: Professor of Physiology, University of Melbourne; Director of the Lister Institute 1903 - 30; Professor of Experimental Pathology, University of London.

(43) Martin to Mellanby 22/2/41 MRC 2100/1a.

(44) Mellanby to Harris 28/2/41 MRC 2100/1a.

(45) Mellanby to Orr 16/5/41. MRC 2100/1a.

(46) Orr to Mellanby 19/5/41. MRC 2100/1a.

(47) Orr to Mellanby 20/5/41. MRC 2100/1a.

(48) Effectively, the Childrens' Minimum Committee was re-named the Childrens' Nutrition Council, and the Committee Against Malnutrition and the CNC then gradually amalgamated as the CNC. The Nutrition Bulletin of the CAM continued into wartime as the Wartime Nutrition Bulletin the second (January 1940) number of which, endorsed "Published Jointly by the Committee Against Malnutrition and the Childrens' Nutrition Council", declared its objective to be:

To maintain the health and stamina of the people in time of war. To safeguard above all the health of children and their mothers. To support measures for fair and equitable rationing. To examine critically such changes in the methods of marketing and retailing food as may come about in the course of the war. To propose schemes for dealing with the nutritional and health needs of the people that may lead directly to desirable reforms of permanent value to the nation. (Second Wartime Nutrition Bulletin (January 1940.)

The January 1940 Bulletin reported that Edinburgh CAM had reconstituted itself as a branch of the CNC and that a new CNC Branch had been established in Glasgow. The fifth (July 1940) issue of the Wartime Nutrition Bulletin was issued by the CNC alone, but the September 1940 number mentioned news of two CAM Branches (Leeds and Ipswich). In later issues of the Bulletin however, there are no further mentions of the CAM.

(49) The twelfth (September 1941) issue of the CNC's

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Nutrition Bulletin dealt with "Composition and Functions of a Local CNC". The aim of the CNC was said to be to "...convert the principles of sound Nutrition into practical politics of the whole community." CNC Branches, it was suggested, could act as the "local ferments that work appropriately within the social medium, educating, rallying support and organising their campaigns for immediate reforms. In association they can become the spear-head of social change towards the Food Policy of the future." It was recommended that CNC Branches recruit "...representatives of medicine, of local scientific workers, and of persons familiar with the work of the social services... a few who have intimate local experience... and... two or three working-class housewives..." The function of the Branch would then be "...to make the community conscious of all the medical, economic and social aspects of the modern Food Problem... to expand the principles of sound diet to all organisations by means of lectures, public meetings, exhibitions, literature etc... to select and initiate local campaigns for improvement or reform of local services..." Examples of specific activities carried out by CNC Branches are: production of a pamphlet on "Nutrition and Local Government in Scotland" and a report of a survey designed to assess the adequacy of income, (Childrens Nutrition Council, Edinburgh, (1940), (1941).) Aberdeen CNC produced a pamphlet entitled Feeding the Wartime Family, Cambridge CNC issued a Table of Food Values, and Ayr CNC organised a lecture course (mentioned in 14th and 26th (December 1941 and June/July 1942) issues of the Nutrition Bulletin.) For an account of an Edinburgh CNC meeting see The Scotsman 1/6/42, 3.

(50) See Children's Nutrition Council (1940).

(51) Orr to Mellanby 20/5/41. MRC 2100/1a.

(52) Mellanby to Orr 20/5/41. MRC 2100/1a.

(53) E.M. 30/5/41. MRC 2100/1a.

(54) Orr to Mellanby 11/9/39 MRC 200/1 vol 5. For the context of this letter see footnote 32.

(55) Some of Orr's pre-war activities were mentioned in Chapter Three, pages 170 - 2.

(56) As already mentioned, Orr was among those consulted by the Minister of Health early in the war, and he became a member of the Scientific Food Committee. Another minor involvement with the Government was his participation in a Nutrition Committee of the Ministry of Economic Warfare, which sought to assess the food situation in Europe. (PRO MH 79/457.)

(57) See footnote 50 on Orr's connections with the CNC.

(58) For example Orr's three Harben lectures given in the third week of October 1939 under the auspices of the Royal Institute of Public Health and Hygiene Lectures. (Orr (1939).) The British Medical Journal reported that during these lectures Orr "...made an extended reference to the importance of nutrition in wartime, and recalled instances of the breakdown of nations at war not primarily as a result of military pressure but because of lack of food..." (British Medical Journal (1939c).)

(59) See Orr and Lubbock (1940), Orr (1940), (1942) (1943).

(60) For example in early December 1939 a question on wartime food policy in the House of Commons was answered with the assurance that "Dr Elliot and Mr Colville [the Secretary of State for Scotland] were in communication with Sir John Orr and other leading authorities to see how good results could be ensured in nutrition during the war." (British Medical Journal (1939d).)

(61) One interviewee told me "I regret to say that Sir John Orr was not highly respected by the people in government departments- and [by] Mellanby-...." He illustrated this by mentioning the omission of Orr from the British delegation to the 1943 international conference on nutrition at Hot Springs USA. (See pages 221 - 2.) According to another interviewee who worked for the Ministry of Food, "Boyd Orr was rather left out of the Ministry of Food because he was felt to be... a terrible administrator..." He added "I don't think that Jack Drummond and Boyd Orr necessarily saw eye to eye..." In any case, the activity of the Scientific Food Committee, of which, as I have already mentioned, Orr was a member, was short-lived. Hammond records that by 1942, "...the various interdepartmental bodies concerned with food policy had faded: first the Food Prices, then the War Cabinet's Food Policy Committee and the Scientific Food Committee..." (Hammond (1951), 229.)

A report of the Scientific Advisory Committee of the War Cabinet of June 1941, of which Mellanby was a member was probably partly responsible for the demise of the Scientific Food Committee. This report suggested that since "nutrition is one of the more important elements in national health, logically the Ministry of Health... should be the focus of Government activity on the subject..." ("National Health and Nutrition", Second report of the Scientific Advisory Committee of the War Cabinet." PRO MH/370. For the Scientific Advisory Committee see McGucken (1979).) It was recommended that the Ministry of Health establish a committee with representatives from the Board of Education, the Ministry of Labour, the Ministry of Food, Ministry of Agriculture and Fisheries, Departments of

Health and Agriculture for Scotland, the MRC, ARC, and the DSIR. Wilson Jameson, the current Chief Medical Officer had already been holding meetings attended by representatives of all these departments except those responsible for agriculture, the ARC, and the DSIR so it was suggested that "...all that is required... is to recognize the committee on a formal basis and to recognise it as a permanent Advisory Body to the Ministry of Health which will continue after the war.(Ibid) The Minister of Health, now Ernest Brown opposed the proposals, which, he suggested, would mean his Ministry would be required to "supervise the vast programme of food, imported and home-grown, which the Ministry of Food are constantly formulating and adjusting, and which it is their function to give practical effect. As you know, the programme is the outcome of continual discussion with the Treasury, Ministry of War Transport, Ministry of Agriculture and Fisheries, Scottish Office, Foreign Office, and probably other departments, on questions of shipping, foreign exchange, crop prospects and so forth, of which the officers in my department have no first-hand knowledge." (Brown to Anderson (the Lord President), PRO MH 79/370.) Brown agreed to the expansion of the "Jameson Committee", but was opposed to giving it any more formal status: "...the Committee owes much of its success to its informality and to the fact that no publicity is given to its recommendations. It is in effect an Inter-Departmental Committee established for the sole purpose of giving the Minister of Food, through his Scientific Advisor, medical advice on problems of human nutrition. I doubt very much if any public recognition of the existence of the committee would add to its usefulness."(Ibid.) Lord Woolton, who was now the Minister of Food responded along similar lines, but soon afterwards, at a meeting at 11, Downing Street, it was agreed that the recommendation that the Ministry of Health should be responsible for nutrition policy should be accepted, but that it should be carried into effect with the "...minimum of disturbance of present practice." (Minutes of a meeting at the Lord Privy Seal's Room, 11, Downing Street, 11/9/41) Subsequent discussions between the Ministers of Health and Food, and the Secretary of State for Scotland, concluded that this would mean that Departments faced with a nutritional problem would look to the Ministry of Health to consider the problem "...from a scientific (not from a political or administrative) point of view and supply the appropriate answer", but that there would "no doubt be cases in which administrative or political considerations may lead a particular committee not to accept the Committee's advice." (E.J.Maude to French 19/9/41, PRO MH 79/370.) The "Jameson Committee" was reconstituted, at a meeting shortly before Christmas 1941. (Eighth meeting of the Standing Committee on Medical and Nutritional Problems 22/12/41. PRO MH 79/370.) From this time on Mellanby, through the representation of the MRC on this Committee,

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and through the MRC's Special Diets Committee (see footnote 09), could consider himself as, effectively "Government Nutrition Adviser", and due to the demise of the Scientific Food Committee, outsiders such as Orr were effectively excluded.

(62) Since the earliest days of the Rowett Research Institute, when Orr participated in the rickets controversy he had been interested in increasing this interchange. See Chapter Two, footnote 312.

(63) This meeting was held on 11/6/41.

(64) Orr to Kon 6/6/41. (NS Council Minutes vol 1 1941-42.)

(65) McCance, Robert Alexander (1898-) Education includes: Sidney Sussex College, Cambridge, BA 1922, MD 1929. Career includes: Biochemical research, Cambridge 1922 - 25; Assistant Physician in charge of Biochemical Research, King's College Hospital, London; Reader in Medicine, Cambridge University 1938; Member of the MRC Special Diets Committee; In charge of Medical Research Council Unit, Germany 1946 - 49; Professor of Experimental Medicine, MRC and University of Cambridge 1945 - 66, now Emeritus; Director of Infantile Nutrition Research Unit, Mulago Hospital, Kampala, 1966 - 68. (WW) See also McCance (1959).

(66) The "Lister people" were Chick, Copping, Macrea, and Hume.

(67) Kon to Orr 13/6/41. (NS Council Minutes vol 1 1941-42.)

(68) Orr to Martin 18/6/41. (NS Council Minutes vol 1 1941-42.) In this letter Orr enclosed a copy of the circular letter, which, he said was "...amended according to your [i.e. Martin's] suggestions."

(69) Of the Original Members of the Nutrition Society who I interviewed in 1979, no-one was able to positively recall pre-war discussions of forming a Nutrition Society. Hopkins and Orr were involved in these discussions for when Orr sent Hopkins a copy of the circular letter, he opened the accompanying letter as follows: "You may remember some time before war broke out that we were talking of forming a Nutrition Society." Orr to Hopkins 18/6/41. (NS Council Minutes vol 1 1941-42.)

(70) "Draft Circular letter." (NS Council Minutes vol 1 1941-42.) This copy of the circular letter is headed "draft" but includes a list of people who had approved of it and is probably the version as amended by Martin, and the version used when calling the inaugural meeting of the society.

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(71) For Chick see Chapter Two footnote 75, and for Drummond see this Chapter, footnote 28

Peters, Rudolph (1889 - 1982). Education includes: King's College London; Gonville and Caius College, Cambridge, MD 1919. Career includes: Benn W Levy Student of Biochemistry, Cambridge 1912 - 13; Dunn Lecturer and Senior Demonstrator Cambridge; Professor of Biochemistry, Oxford, 1925 - 54. (WW)

(72) Hammond, John (1889 - 1964). Education includes: Downing College, Cambridge; Agricultural Research Scholar, MAF 1912 - 14. Career includes: Research Physiologist, Animal Nutrition Research Institute Cambridge, 1920; Superintendent Animal research Station, Cambridge, 1931; Reader in Animal Physiology, Cambridge University. (WW and Slater and Edwards (1965).)

(73) McCarrison, Major-General Sir Robert (1878 - 1960). Education includes: Queens College Belfast; Career includes: Indian Medical Service 1901; Director Nutrition Research, India Research Fund Association 1927 - 35; Director of Postgraduate Education, Oxford University, 1945 - 55. (WW) See also Sinclair (1953).

(74) Wright, Norman Charles (1900 - 1970). Education includes: University College, Reading; Christ Church College, Oxford, MA 1926; Caius College, Cambridge, PhD 1926. Career includes: Research Assistant NIRD 1924 - 26; First Director, Hannah Dairy Research Institute 1928 - 47; Chief Scientific Officer Ministry of Food, and Ministry of Agriculture Fisheries and Food, 1947 - 59; Deputy Director General, FAO, UN 1959 - 63. (WW)

(75) For an account of the foundation and development, and the scientific work of the Hannah Dairy Research Institute see Smith (1978) and Moore and Rook (1978), and Rook (1978).

(76) Martin to Orr 11/6/41. (NS Council Minutes vol 1 1941-42.)

(77) Letters inviting people to sign the circular letter which survive in the Nutrition Society archives are: Orr to Mellanby 17/6/41, Orr to Hopkins, 18/6/41, Orr to Martin 18/6/41, Orr to Peters 18/6/41, Orr to Harris 20/6/41. In writing to Mellanby and Martin he mentioned that he had written to Cathcart. Orr also told Peters in a letter dated 30/6/41 that "Every person to whom I have written, with one exception from whom a reply has not yet been received, say there is no doubt that a Society of some kind should be formed." As Cathcart was neither a signatory to the circular letter, nor later a member of the Nutrition Society, it seems likely that here Orr was referring here

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to Cathcart. (For Cathcart's sole contribution to a Nutrition Society meeting, see Cathcart (1947).) Since in Orr to Peters 30/6/41, Orr mentions here that all the other people he wrote to agreed with the idea of the new society, and as there is no record of letters being sent to McCarrison and Wright this suggests that they did not sign to the circular letter because Orr did not invite them to do so. They both later became Foundation members. (All letters referred to here from NS Council Minutes vol 1 1941-42.)

(78) Barcroft, Sir Joseph (1872-1947). Education includes: King's College, Cambridge, BSc 1896. Career includes: Professor of Physiology, Cambridge University 1926 - 37; Chairman Food Investigation Board and Member of the Advisory Council, DSIR, 1939 - 44; Member ARC 1938 - 43; Director of Unit Physiology, ARC, 1941 - 47. (WW) See also Franklin (1953).

(79) See Hutchinson (1972) for the formation and early development of the Food Investigation Board.

(80) See footnote 77.

(81) Orr to Martin 18/6/41. (NS Council Minutes vol 1 1941-42.)

(82) Martin to Orr 20/6/41. (NS Council Minutes vol 1 1941-42.)

(83) Sinclair, H.M. Education includes: Oriel College Oxford, First Class Animal Physiology 1932; University College Hospital 33 - 36. Career includes: University Demonstrator and Lecturer in Biochemistry, Oxford 1942 - 47; Director Oxford Nutrition Survey, 1942 - 47; Hon Nutrition Consultant, Control Commission, Germany, 1945 - 47; Reader in Human Nutrition and Director of Human Nutrition Laboratory, Oxford, 1951 - 58. (WW)

(84) Bacharach, A.L. (1891 - 1966) Education: Clare College, Cambridge. Career includes: Wellcome Chemical Research Lab and Wellcome Chemical Works, 1915 - 19; Nathan & Co, subsequently Glaxo Labs, 1920 - 56; Honorary Treasurer Nutrition Society 1942 - 52, President 1959 - 62. (WW and Kon (1967). See also Times 18/7/66.)

(85) Mellanby to Orr 20/6/41. (NS Council Minutes vol 1 1941-42.) Mellanby's remark about Bacharach being a good organiser, may refers to his involvement in the Nutrition Panel of the Food Group of the Chemical Industry as first secretary, (see Jephcott (1966) and Kay (1972b) but the reference to his possible unacceptability probably refers to Bacharach's left-wing political affiliations. (See page 245 and footnote 95.)

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- (86) Drummond to Orr 20/6/41. (NS Council Minutes vol 1 1941-42.) The American Institute of Nutrition was founded 1928, and began publishing the Journal of Nutrition in that year. (National Academy of Science - National Research Council (1955), 66.)
- (87) Harris to Orr 23/6/41. (NS Council Minutes vol 1 1941-42.)
- (88) Orr to Harris 20/6/41. (NS Council Minutes vol 1 1941-42.)
- (89) See Kay (1972b).
- (90) Orr to Harris 20/6/41. (NS Council Minutes vol 1 1941-42.)
- (91) Ibid.
- (92) Harris to Orr 23/6/41. (NS Council Minutes vol 1 1941-42.)
- (93) For Nutrition Abstracts and Reviews see Chapter Three, footnote 314. Sir Charles Martin, former director of the Lister Institute, was housing part of the Institute's Nutrition Group in his house in Cambridge during the war. Martin was an editor, and E.M.Hume and A.M.Copping were assistant editors of the Journal. See Nutrition Abstracts and Reviews 1940 - 41, 10 (vii).
- (94) See last footnote and Chick et al (1971).
- (95) See footnote 36.
- (96) Harris to Orr 30/6/41. (NS Council Minutes vol 1 1941-42.)
- (97) Kay to Orr 24/6/41. (NS Council Minutes vol 1 1941-42.)
- (98) Peters to Orr 28/6/41. (NS Council Minutes vol 1 1941-42.)
- (99) See page 200.
- (100) Orr to Magee 25/6/41. (NS Council Minutes vol 1 1941-42.)
- (101) See footnote 19.
- (102) Huggett, Arthur St George Joseph McCarthy (1897 - 1968). Education includes: St Thomas's Hospital Medical School. Career includes: Demonstrator in Physiology, St

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Thomas's 1919 - 30; Reader in Pharmacology, University of Leeds 1931 - 35; Professor of Physiology, University of London, 1935 - 64. (WW)

(103) Woodman, H.E. School of Agriculture, Cambridge. Woodman was author of editions 6 - 14 (1930 - 57), of the Ministry of Agriculture's Rations for Livestock. See Eden and Buttress (1969).

(104) Orr to Woodman 16/7/41. (NS Council Minutes vol 1 1941-42.)

(105) Those who attended the meeting were A.L.Bacharach (Glaxo), E.C.Bate-Smith, (Low Temperature Research Station, Cambridge), H.Chick, (Lister) K.M.Henry, H.D.Kay, S.K.Kon, E.Mawson, (NIRD) E.M.Cruikshank, L.J.Harris, E.Kodicek, L.W.Mapson, T.Moore, J.Yudkin, (Dunn) H.M.Sinclair, (Department of Biochemistry, Oxford), A.C.Fraser, A.St.G.Huggett, H.C.Stewart (St. Mary's Hospital Medical School), N.W.Pirie, (Rothampstead Experimental Station), B.S.Platt, (MRC), J.R.Marrack, (Herts County Council, Pathology Dept., Haymeads Emergency Hospital, Bishop's Stortford), H.M.Bruce, E.W.Kassner, (Pharmaceutical Society), J.Hammond, (Animal Research Institute, Cambridge,) E.R.Bransby, (Ministry of Health), W.Godden, (Rowett) M.W.Grant, (King's College of Household and Social Science). (Minutes of Inaugural meeting 23/7/41, NS Council Minutes Vol 1, 1941-42.)

(106) According to "Minutes of Inaugural Meeting 23/7/41" in NS Committee Minutes 5/8/41 - 19/3/43 File 1, there were 13 centres represented, but it would appear from the list of attenders given in the last footnote, taken from a version of the minutes in a different file, the number of centres represented was actually 15.

(107) Bacharach thought that there would be considerable overlapping with the Nutrition Panel of the Food Group of the Society of the Chemical Industry but Kay doubted whether this would be as great as Bacharach supposed. Hammond suggested that the new society could be an off-shoot of the Physiological or the Biochemical Society. (Minutes of Inaugural meeting 23/7/41, NS Council Minutes Vol 1, 1941-42.)

(108) See footnote 86.

(109) Huggett raised the question of the nature of the Society's activities, and Orr suggested that they hold meetings at Research Institutes on a particular theme. Papers would be read and discussed. (Minutes of Inaugural meeting 23/7/41, NS Council Minutes Vol 1, 1941-42.)

(110) Chick emphasised that the Society should limit

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membership and that the Committee should have the power to "assess the qualifications of would-be members." Bacharach thought that the scientific qualifications for membership should be widely interpreted. Ibid.

(111) Besides Orr, Harris, Bacharach and Cruikshank, the other members of the Committee were Chick, H.H.Green (Veterinary Laboratory, Ministry of Agriculture and Fisheries, Weybridge), Hammond, Professor H.P.Himsworth (University College Medical School), Huggett, Kidd, Kon, Platt, Sinclair. Ibid.

(112) The Officers appointed were as had been envisaged in the correspondence which preceded the inaugural meeting, although Orr had suggested Sir Joseph Barcroft, the Chairman of the Food Investigation Board as "President". Harris had opposed this idea. He told Orr that Barcroft: "...is unknown to workers on nutrition as having done any practical first-hand work..." on the subject. (Harris to Orr 30/6/41 NS Council Minutes Vol 1, 1941-42.)

(113) Minutes of Inaugural Meeting. (NS Committee Minutes 5/8/41 -19/3/43.)

(114) H.P.Himsworth (1905 -) Education includes: University College and University College Hospital, London. Career includes: Deputy Director of the Medical Unit, University College Hospital, 1936; Professor of Medicine, University of London and Director of the Medical Unit, University College Hospital, 1939 - 49; Secretary of the MRC 1949 - 68. (WW)

(115) H.H. Green. Education includes: BSc Glasgow Agricultural Chemistry. Career includes: work in South Africa 1914 - 29; attached to Wye College 1931; Empire Marketing Board 1932; Ministry of Agriculture 1933; Senior Research Officer and head of Biochemical Department, Ministry of Agriculture and Fisheries, Weybridge from 1934. (WWBS)

(116) Minutes of First Committee Meeting 5/8/41. (NS Committee Minutes 5/8/41 -19/3/43.)

(117) Ibid.

(118) Minutes of Second Executive Committee Meeting 23/8/41. (NS Early EC Minutes.)

(119) Minutes of Third Executive Committee Meeting 20/9/41. (NS Early EC Minutes.)

(120) Orr to Cruikshank 24/7/41. (NS Council Minutes vol 1 1941-42.)

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(121) Initially members were recruited by inviting specific individuals to become "Foundation Members". At the First Executive Committee Bacharach, Hammond, Platt, Harris and Green were asked to draw up lists of potential "Foundation Members" under the following headings-, "Industrial", (Bacharach) "Agricultural and Physiological", (Hammond) "Medicine", (Platt) "Biochemistry and Food Investigations", (Harris) and "Animal Health".(Green) (Minutes of First Executive Committee Meeting 5/8/41. NS Early EC Minutes.) When the lists were brought to the second EC, there was a total of 350 names from which a list of 223 was drawn up under the 8 headings given in the table below. (Minutes of Second Executive Committee Meeting 23/8/41. NS Early EC Minutes.) By the Fourth Executive Committee meeting, in November 1941, these 223 and a further 36 people had been invited to be Foundation Members, and an analysis of acceptance of Foundation Membership and applications for ordinary membership was presented, which has been used in constructing the following table:

	No reported Circulated	No reported Accepted	Percentage acceptance	Percentage of total Foundation Membership	Number of enquiries about Ordinary Membership	Application forms for Ordinary Membership Received
Commercial	18	13	72	9	28	8
Biochemical & Physiological*	90	61	68	46	7	4
Veterinary	23	17	74	11	2	1
Medical	49	45	92	9	15	6
Official	31	18	58	12	21**	7
"Sociological" "Statistical etc"	11	5	45	3	0	0
Agricultural	32	15	47	10	1	1
Dietetic	5	5	100	3	5	0
TOTAL	259	148			79	27

* This heading was used at the 2nd EC, but at the 4th, it was replaced with just "Biochemical"

** Of these 21 it was noted that 16 were Medical Officers of Health.

(Minutes of Fourth Executive Committee Meeting 15/11/41. NS

Early EC Minutes.)

If we accept these figures at face value, they suggest that while the founders of the Nutrition Society achieved some success in their aim of setting up an organisation which would allow interchange between workers on different aspects of nutrition, in the initial membership there appears to have been a preponderance of physiologists and biochemists. However, it also seems that as applications for ordinary membership were received that this preponderance began to be reduced by the relatively large number of applications which were received from "Commercial", "Medical" and "Official" workers.

At the second meeting of the General Committee, in December 1941, an enquiry which had been received concerning the question of whether Medical Officers of Health were eligible for membership was discussed, and it was agreed that the rule defining qualifications for membership should be interpreted loosely so as to include workers such as Medical Officers. (Minutes of Second Meeting of the General Committee 16/12/41. NS Committee Minutes 5/8/41 - 19/3/43.) Twelve months later however some anxiety had arisen as to whether the "qualifications for membership" rule was being interpreted too loosely. After a discussion at a Committee meeting in December 1942, it was decided to defer consideration of the application of four candidates for membership until the following meeting, when the possibility of creating a class of Associate Membership "...for those not directly contributing to research" would be discussed. (Minutes of Eighth Meeting of the General Committee 4/12/42. NS Committee Minutes 5/8/41 - 19/3/43.) At the following Committee meeting, it was decided by vote, after a long discussion that "...professionally qualified persons engaged on work in nutrition, but whose original contributions to the 'scientific knowledge of nutrition' could not be held to entitle them to full membership e.g. dieticians, household science practitioners and lecturers, and educationalists should be given the opportunity of attending meetings and receiving publications by means of Associate Membership, under the terms of which, however, they would not be entitled to vote at business meetings and therefore decide the policy of the society." (Minutes of Ninth Meeting of the General Committee 5/2/43. NS Committee Minutes 5/8/41 - 19/3/43.) The decision to elect a further thirteen candidates was deferred pending the outcome of the proposal for Associate Membership. This resolution was discussed at a meeting of delegates of the Scottish and English Groups, when it was decided to remit the matter to the Council of the Society, which was about to be created under a new constitution as the governing body of the whole organisation. (Minutes of a meeting of Delegates of the English and Scottish Groups 3/4/43. NS Council Minutes Volume 2 1943-1947.) Members were also given a chance to

express their views at the Annual General Business meeting which recommended to the Council that "...the existing qualifications for membership should remain substantially unchanged and should be interpreted in a wide sense, so as to permit the election of candidates who were actively working in nutrition in various fields... even if in some instances they had not contributed original published work." (Minutes of Second Annual General Business Meeting 22/5/43 NS Council Minutes Volume 2 1943-1947.)

When the matter was considered by Council, in September 1943 it was agreed that "...it is essential to have a means to exclude from the Society persons who were unqualified, quacks, food cranks, or those whose primary interest in joining the Society was commercial...", and so the original qualifications for membership were not be altered. But it was agreed that the rules should be interpreted in order to include "...any person with special competence and responsibility who is actively engaged in furthering or in applying such scientific knowledge in the administration of the food policy of the government or any other organisation approved of by the electing committee." (Minutes of First Meeting of Council 11/9/43 NS Council Minutes Volume 2 1943-1947.)

(122) For Sinclair see footnote 83.

(123) Sinclair to Orr 17/6/41. (NS Council Minutes vol 1 1941-42.)

(124) For example in December 1941, when Orr had just returned from the USA and Canada, he told the second General Committee Meeting that during his visit he had been "...greatly impressed by the close cooperation which existed between scientists and governmental and administrative departments in those countries, and he considered that this cooperation would be of the greatest value in preparing a policy of nutritional welfare. He felt that the Nutrition Society could fulfil a useful function in Britain by collecting and coordinating expert knowledge of nutritional problems." (Minutes of Second Meeting of the General Committee 16/12/41. NS Committee Minutes 5/8/41 - 19/3/43.)

(125) Orr to Cruikshank 24/7/41. (NS Council Minutes vol 1 1941-42.)

(126) See Proceedings of the Nutrition Society (1944) 1 (1) 7 - 18.

(127) See Proceedings of the Nutrition Society (1944) 1 (1) 19 - 41.

(128) See Proceedings of the Nutrition Society (1944) 1 (1) 42 - 83.

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(129) Minutes of Third Meeting of the General Committee 12/1/42. (NS "Committee Minutes 5/8/41 - 19/3/43.)

(130) See Proceedings of the Nutrition Society (1944) 1 (1) 84 - 112.

(131) Pirie, N.W. Education includes: Emmanuel College, Cambridge. Career includes: Demonstrator in Biochemical Lab., Cambridge, 1932 - 40. Virus physiologist, 1940 - 46, Head of Biochemistry Department, 1947 - 73, Rothamstead Experimental Station, Harpenden.

F.E.le Gros Clark see Chapter Three footnote 298.

Yates, Frank. Education includes: St John's College, Cambridge. Research Officer and Mathematical Adviser Gold Coast Geodetic Survey, 1927 - 31. Rothamsted: Department of Statistics 1931, Agricultural Statistical Service 1947, Deputy Director 1958. (WW)

(132) N.W.Pirie, F.E.le Gros Clark and F.Yates to Harris 29/4/42. (NS Committee Minutes 5/8/41 - 19/3/43.)

(133) For the Committee Against Malnutrition see page 169.

(134) After the war started le Gros Clark continued to work in London for a time, and then moved to Harpenden, where he worked closely with Pirie. (Interview.) For some of le Gros Clark's wartime activities see London Council of Social Service (1943), (1945), and Clark (1942), (1943b), and for later collaboration with Pirie, Clark and Pirie (1951).

(135) The CNC Nutrition Bulletin spoke of the "nutrition movement", for example, in the August 1943 issue. See page 223.

(136) For Platt see footnote 35.

(137) Before the war, Platt was in Nyasaland, supported by the MRC and starting work on the programme advocated by the Committee on Nutrition in the Colonial Empire in their report of 1939. In 1940 Mellanby brought him back to Britain to help with the MRC's wartime nutrition work. He became Joint-Secretary to the Scientific Food Committee. For Platt's work in Africa, see Platt (1944).

(138) Minutes of the Fifth Meeting of the General Committee 30/5/42. (NS Committee Minutes 5/8/41 - 19/3/43.)

(139) See Orr (1944a).

Woolton, Frederick James Marquis (1883 - 1964). Education includes: Manchester University (MA, BSc). Career includes: Research Fellow on Economics, Manchester University; Director-General of Equipment and Stores in the Ministry of Supply 1939 - 40; Minister of Food 1940 - 43.

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Member of the War Cabinet, 1943 - 45. (WW)

Woolton took over from Morrison, the first wartime Minister of Food in April 1940. It was thought by many that Morrison was unsuccessful as Minister of Food, (see, for example Darling (1941), 80), and that Woolton's performance was very much better.

(140) Orr (1944).

(141) The Scotsman, for example referred to remarks made by Woolton at the Conference under the headings "Enough Food to Go Round", and "No White Bread for Invalids". (The Scotsman 1/6/42, 4.)

(142) Reading, Dowager Marchioness of, (1894 - 1971). Chairman and Founder of the WVS (later WRVS), 1938. (WW)

(143) Clark (1944). See Clark (1936) for his book on this subject.

(144) Barcroft (1944).

(145) These letters were referred to the Programmes Sub-Committee. (Minutes of the Fifth Meeting of the General Committee 30/5/42. NS Committee Minutes 5/8/41 - 19/3/43.)

(146) Magee to Harris 27/6/42. (NS Committee Minutes 5/8/41 - 19/3/43.)

(147) Magee's co-signatories were as follows: J. or W.C.W.Nixon (who signed same copy as Magee), H.D.Kay, M.E.Mawson, S.Y.Thompson, K.M.Henry, (NIRD) H.M.Bruce (ARC at the NIRD), R.Peters (Biochemistry Department, Oxford), J.A.Charles, (Public Health Department, Newcastle-upon Tyne), J.W.Hunter (Public Health Department, Ipswich), Lord Dawson of Penn (Physician, London Hospital, and Chairman, Army Medical Advisory Board), J.A.Glover, (National Institute for Medical Research), and S.A.Henry (Ministry of Labour). Ibid.

(148) Ibid.

(149) Harris to Magee 30/6/42. (NS Committee Minutes 5/8/41 - 19/3/43.)

(150) Magee to Harris 10/7/42. (NS Committee Minutes 5/8/41 - 19/3/43.)

(151) Ibid.

(152) Harris to Magee 15/7/42. (NS Committee Minutes 5/8/41 - 19/3/43.)

(153) Minutes of the Sixth Meeting of the General Committee

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10/8/42. (NS Committee Minutes 5/8/41 - 19/3/43.)

(154) Ibid.

(155) See, for example Kay's summing up of the conference on "Milk" in July 1943, Lord Horder summing up at the meeting on "Post-War Nutritional Relief" in November 1943, and Orr summing up at the conference on "Budgetary and Dietary Surveys" in February 1944. (Proceedings of the Nutrition Society 1944 2 (3 & 4) (1944) 161 - 2, 214 - 215 and 3 (1945) 51 - 52.) This summing up appears to have been the usual practice at English Group Conferences, but not at conferences organised by the Scottish Group.

(156) Miss M. Olliver Education includes: King's College of Household and Social Science, BSc (H & S Sc), (1926); BSc, Chemistry, 1928. Career includes: Chief Chemist, Chivers & Sons Ltd., 1945 - 60. (WWBS)

(157) Minutes of the Sixth Meeting of the General Committee 10/8/42. (NS Committee Minutes 5/8/41 - 19/3/43.)

(158) Ibid.

(159) For Huggett see footnote 102.

(160) Huggett to Harris. Minutes of the Sixth Meeting of the General Committee 10/8/42. (NS Committee Minutes 5/8/41 - 19/3/43.)

(161) Huggett to Harris 31/5/43 (NS Council Minutes Volume 2 1943-47.)

(162) Ibid.

(163) Ibid.

(164) Ibid.

(165) Ibid.

(166) Under the Original Constitution of the Nutrition Society there was a General Committee which met in the South, and the Scottish Group Committee. Under the the Constitution introduced in 1943, a Council was established as the overall governing body, under which there were English and Scottish Group Committees. For some more information, and background to these constitutional changes see Chapter Five pages 237 - 8.

(167) The Programmes and Publications Sub-Committee was established in August 1942 by fusion of the previously established separate Programmes and Publications Committees. (Sixth General Committee Meeting, 10/8/42. NS

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Committee Minutes, 5/8/41 - 19/3/43.) The first Publications Sub-Committee recorded in the Minutes took place in March 1942, the members of which were Barcroft, Harris, Kon and Platt, Bacharach and Cruikshank. (Minutes and Report of Sub-Committee on Publications. Ibid.) The Programmes Sub-Committee immediately before fusion consisted of Barcroft, Bacharach, Cruikshank, Green, Hammond, Macrae, Platt and Harris. (Minutes of Programmes Sub-Committee 20/6/42. NS Early EC Minutes).

(168) Minutes of First English Group Committee Meeting. 2/7/43. (NS Council Minutes vol 2, 1943-47.)

(169) Programmes and Publications Sub-Committee 14/7/43. (NS Council Minutes Volume 2 1943-1947.)

(170) Second English Group Committee meeting 4/8/43. (NS English Group Committee Minutes 2/1/43 - 21/2/47.)

(171) Minutes of First Meeting of Council 11/9/43 (NS Council Minutes Volume 2 1943-1947.)

(172) The analysis of response to questionnaire on the establishment of a technical section, presented to the July 1944 English Group Committee meeting, was as follows:

Tot No replies	216
No English Members	374
No English replies	185
No Scottish Members	110
No Scottish Replies	31

<u>Question</u>	<u>No of votes</u>		<u>No answer</u>
	<u>Yes</u>	<u>No</u>	
1. Do you approve in a general way of the conference meetings so far organised?	201	9	6
2. Do you wish the meetings to continue for the present on substantially the same lines as herefor?	176	22	18
3. Would you prefer the conferences henceforth to become more highly specialised or technical?	31	145	40
4. Would you prefer the conferences henceforth to become less highly specialised or technical?	11	154	51
5. Are you in favour of initiating now a new series of technical meetings in addition to these conferences for discussion?	111	81	24

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6. If so would you be prepared to increase your subscription by 50% to cover the cost of the suggested additional technical meetings?	109	53	54
7. Would you prefer a separate technical section to be formed now, with a separate additional subscription, only for those wishing to join it?	84	95	37
8. If so, would you be prepared to join the technical section, assuming the subscription to be about 7/6 p.a.	84	72	60

(N.S.C., E.G.6., 21.7.44. NS General 41 - 52.)

(173) Of the 489 members less than half voted, but of these 109 were in favour of, and would be prepared to pay for additional technical meetings.

In a paper accompanying the results of the questionnaire Harris discussed and gave details of the responses. In a section of this paper entitled "Scope of Scientific Conferences" he observed that criticisms made in response to the questionnaire tended to "cancel each other out". He quoted V.H.Booth, of the Dunn Nutritional Laboratory as stating that the conferences were "too clinical", while W.C.W.Nixon, Professor of Obstetrics, Istanbul University, thought that they were "not sufficiently clinical". Dr. J.M.Mackintosh, a Medical Officer from Aberdeen thought the meetings were "extremely useful to medical officers". Dr H.S.Stannus, Senior Physician of the French Hospital, who was formerly of the Colonial Medical Service and who was engaged in clinical survey work for the Ministry of Health (see Ministry of Health (1946), 119) thought the meetings were of "no use to the medical man". Harris also observed that some members "wanted more (or alternatively less) attention paid to topics in animal pathology, biochemistry, agriculture, sociology." Some members thought the meetings too "general" while others thought "important matters of public policy were not being sufficiently considered." Stannus stated that the meetings were "a playground for social workers" while F.Kidd, (see footnote 19) wanted "discussions which would point the way to world policy" and Dudley Stamp, Reader in Economic Geography, University of London suggested "further consideration of Nutrition in Relation to Agricultural Policy".

But Harris recorded that only three members who were "definitely hostile" to the record of the society. These were Stannus, Magee and McCance. Magee stated: "The present vague and woolly conferences should cease. I can never find anyone except the officers who are satisfied, Instead there should be several meetings per annum at which nutritional subjects should be discussed and researches brought

forward. These should be "technical" or "non-technical" as may be. What matters is to have the subject fully discussed, and not skated over casually as at present. Probably a lot of "hangers-on" will be scared away by technical discussions - so much the better - the meetings are far too big." In addition he suggested that there could be "clinical meetings for clinical members of the Society." McCance thought that the "conference idea is a bad one for a scientific society." He continued: "The Nutrition Society conferences are far too organised. Everyone speaks because invited to do so. Even the discussion is organised by invitation. Better for a free fight over an original communication than a deadly dull discussion by second-class people arranged by a dictatorial committee." (NSC E.G. 5 21/7/44. NS Council Minutes Volume 2 1943-1947.)

(174) Ibid.

(175) The list of people who recommended postponement until publication was possible included Professor D.C.Harrison, (Department of Biochemistry, Queen's University, Belfast), Miss K.H.Coward (Pharmaceutical Society), Miss R.Pybus, (Dietetic Department, Edinburgh Royal Infirmary), Professor J.A.Nixon (Emeritus Professor of Medicine, University of Bristol), G.R.A.Short, (Bush & Co Ltd.), and T.H.Mead (B.D.H. Ltd.).

The list of those who objected on grounds of overlapping included C.R.Harington (National Institute for Medical Research), F.G.Young (Secretary of the Biochemical Society), Professor T.P.Hilditch, (Professor of Industrial Chemistry, Liverpool University), Dr F.Bergel, (Director of Research, Roche Products Ltd), Mr.J.I.M.Jones, (Crookes Laboratories), Dr.H.Lehmann, (Runwell Hospital) Dr W.F.Elvidge. (Boots Pure Drug Co.), Mr.J.Foley (Sales manager, Organon Ltd.) Kidd, (Food Investigation Board). Ibid.

(176) When the Nutrition Society was founded Harris had written to the Secretaries of the Physiological and Biochemical Societies, and the Society of the Chemical Industry, to assure them that there would be "no clash of interests" between the Nutrition Society and their own Societies. The Nutrition Society, he said, would be concerned with "more general and less specialized ground." (Minutes of 2nd EC 23/8/41, NS Early EC Minutes.) F.G.Young, Secretary of the Biochemical Society replied that his Committee "...welcome the formation of the Nutrition Society... They realize that the aspects of nutrition with which your society will be concerned (e.g. Clinical, Sociological), lie outside the proper interests of the Biochemical Society..." (Minutes of 3rd EC 20/9/41, NS Early EC Minutes.) G.L.Brown, Secretary of the Physiological Society sent a similar favourable reply. (Minutes of 4th EC 15/11/41, NS Early EC Minutes.) The

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Council of the Society of the Chemical Industry however, did not approve of the establishment of the Nutrition Society but appointed three members to meet delegates of the Nutrition Society with a view to conducting negotiations to avoid overlapping. (Minutes of the 3rd Meeting of the General Committee, 12/1/41. NS Committee Minutes, 5/8/41 - 19/3/43.) This resulted in the organisation of the fourth meeting of the English Group, on "Dehydration of Foods and the Effect on their Nutritional Value" as a joint meeting with the Food Group. (See Proceedings of the Nutrition Society (1944) 1 (3&4), 113-41.)

(177) A "Technical Section" was never formed but "Open Scientific Meetings" were introduced soon after the war. See pages 239 - 40.

(178) The origins of the Society's publishing activities will be considered briefly in the next chapter. See pages 237 - 8.

(179) Minutes of the Sixth Committee Meeting 10/8/42. (NS Committee Minutes, 5/8/41 - 19/3/43.)

(180) The Sub-Committee appointed consisted of Barcroft, Hammond, Kon, and Harris. Ibid.

(181) Yudkin's Biographical details will be given in Chapter Five, Section 5.4.

(182) Yudkin (1942).

(183) Harris (1944), Yudkin (1944c).

(184) The technique had been developed by the American H.D.Kruse, (see Kruse (1940) and (1941)) who was an influential nutrition scientist in his own country. (Kruse, Harry D, (1900 -). Career includes: Associate Biochemist, School of Hygiene and Public Health, John Hopkins 1928 - 33; Associate Professor 1933 - 37; With Millbank Memorial Fund 1937 - 52. Member of: Committee on Nutrition of the American Red Cross, 1940 - 53; Food and Nutrition Board, National Research Council 1942 - 47. Chairman of the Committee on Diagnosis and Pathology of Deficiency Diseases 1943 - 47. Consultant U.S. Army, 1942 - 45. (American Men and Women of Science, 12th Edition, 1972.))

The potential of the Kruse slit-lamp microscope technique was celebrated at the first Nutrition Society meeting particularly by Sinclair during the discussion. (Sinclair (1944).) By the time of the discussion in the The Times however, the "Kruse test" was less in vogue. Sinclair now urged caution with regard to the application of chemical means of assessment of nutritional status:

...the need for the elaboration of the technique

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remains, because the methods are difficult and great harm can be done by uncritical work. For instance, your correspondent states that by microscopic examination of the eye, early stages of deficiency of vitamin A can be detected. The evidence for that rests solely upon the claim of one worker [Kruse] who by that criterion, found deficiency in almost all the adults he examined. His work has been publicly refuted, on both sides of the Atlantic, there is unpublished work that does not support him. If therefore that test were applied to the whole population - as your correspondent would wish - and if the results were applied, there would probably be a useless national production of carrots at the expense of potatoes, and a large waste of money and paper in trying to persuade us to eat them.

However, Sinclair concluded that the need for a critical approach which he had highlighted, supported the argument for a Nutrition Council. (Sinclair (1942).)

(185) Of the four staff, six "attached workers" and five "visiting workers" at the Dunn listed in the MRC Report for 1939 - 45, (page 291) there is only one other medically qualified worker besides Yudkin.

(186) Yudkin (1942a).

(187) He mentioned the Ministries of Health and Food and the MRC as the most important, and in addition the Board of Education, the Ministry of Labour and National Service, the Agricultural Research Council, the Food Investigation Board, the Cabinet Advisory Committee on Food Policy, the Royal Air Force, Army and Navy, Local Authorities, University, College and Commercial Laboratories. Ibid.

(188) Ibid.

(189) See Chapter Three, footnote 335.

(190) Moore (1942).

(191) Hans Krebs (1900 - 81). Education includes: MD Hamburg 1925, MA Cantab, 1934. Career includes: Demonstrator in Biochemistry, Cambridge, 1934 - 35; Lecturer in charge of the Department of Biochemistry, Sheffield, 1938 - 45; Professor 1945 - 54; Professor of Biochemistry, Oxford 1954 - 67. (WW)

(192) See footnote 01.

(193) Krebs (1942).

(194) Letters appeared in The Times on the subject of the

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Nutrition Council on 1/9, 3/9, 4/9, 8/9, 10/9, 11/9, 14/9, 15/9, 16/9, 18/9, 19/9, 21/9, 22/9, 23/9, 25/9, 26/9, 28/9, 29/9, 1/10, 1942.

(195) For Dawson see Watson (1951).

(196) Lord Thomas Horder (1871-1955). Consulting Physician St Bartholemew's Hospital; Extra Physician to King George VI; Medical Adviser, Ministry of Food; President, Food Education Society. See Witts (1971)

(197) Dawson (1942), Horder (1942).

(198) Wilson (1942).

Wilson, Sir Charles (McMoran), later Lord Moran, (1882 - 1977). President of the Royal College of Physicians 1941 - 50, Consultant Adviser, Ministry of Health. (WW)

(199) Bacharach (1942).

(200) Ibid.

(201) Jameson, Sir (William) Wilson (1885 - 1962) Education includes: Aberdeen and London Universities. Career includes: Dean and Professor London School of Hygiene and Tropical Medicine; Member of the MRC 1940 - 44; Chief Medical Officer, Ministry of Health and Ministry of Education, 1940 - 50. (WW) See Goodman (1970).

(202) Minutes of Eighth Committee meeting, 4/12/42. (NS Committee Minutes 5/8/41 - 19/3/43.)

(203) Ibid.

(204) Jameson to Harris 13/1/43. (MRC 2100/1a.)

(205) Professor J.R.Marrack was appointed Convenor of the new Sub-Committee, the other members being Barcroft, Cowell, Himsworth, Kon, Krebs, McCance, Sinclair, Yudkin, and A.W.Ashby, Professor of Agricultural Economics, Aberystwth, H.M.Mackay, Physician, Queens Hospital for Children and Member of Staff of the MRC, and Harris. It was decided to invite relevant Government Departments, Official Bodies, and the Services, to appoint representatives to act as Observers on the Committee and the Scottish Group was asked to consider "the most effective way in which they may be able to perform a like service... in Scotland." (Minutes of the Ninth Meeting of the Committee of the Nutrition Society, 5/2/43. NS Council Minutes Volume 2, 1943-47.)

(206) Harris to Mellanby 4/2/43. (MRC 2100/1a.)

(207) Mellanby to Harris 23/2/43. (MRC 2100/1a.)

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(208) Mellanby told Harris: "Sinclair is playing a large part in these surveys and although he is receiving financial help from the Council, he told me that he did not wish the Medical Research Council to have any controlling influence in the work... This is of course an extraordinary position, and if adopted... generally would result in complete chaos. As however, most of the finances... have been provided by the... Rockefeller Foundation... I asked the Council to accept the position as an exceptional case..." See also Ministry of Health (1946), 119, which indicates that there was a close relationship between the Oxford Nutrition Survey and the Ministry of Health.

(209) Mellanby to Harris 23/2/43. (MRC 2100/1a.)

(210) Minutes of the Standing Committee for the Co-ordination of Nutrition Surveys 4/3/43. (NS Council Minutes Volume 2, 1943-47.)

(211) Marrack, John Richardson (1886 - 1976). Education includes: Cambridge and London Universities, MD Camb 1923. Career includes: University Lecturer in Chemical Pathology, Cambridge University; Professor of Chemical Pathology, London Hospital, 1934 - 52. (WW) Several of my interviewees spoke of Marrack as a communist, (one called him a "card-carrying" communist) and one said that he had suffered a loss of reputation among medical colleagues due to his use of left-wing publishers Victor Gollanz for the publication of his book Nutrition and Planning in 1941. As far as the Committee of the Nutrition Society was concerned however, it seems that it was this publication that qualified Marrack as a suitable person to coordinate research in nutrition.

(212) Minutes of the Tenth Meeting of the Committee of the Nutrition Society 10/3/32. (NS Committee Minutes 5/8/41 - 19/3/43.)

(213) It was suggested that Marrack should approach the Ministry of Health, Ministry of Food, the Services, Ministry of Supply, MRC, ARC, Board of Education, Ministry of Labour and the DSIR. Ibid.

When Marrack asked Mellanby to appoint an MRC representative he received a curt reply:

The Medical Research Council have not taken any great interest in nutrition surveys during the war, because so many other bodies undertook work of this kind... I do not think, therefore, that it will be necessary for the Medical Research Council to be represented on your survey committee as all the work, financed by them, will be co-ordinated by the Council themselves.

(Mellanby to Marrack, 7/4/43 MRC 2100/1a.)

When Marrack attempted to explain the terms of

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reference of the Committee (Marrack to Mellanby, 9/4/43 MRC 2100/1a), he was again rebuffed:

...the only information I have about your committee came from Jameson, namely, that its object was to co-ordinate reports of field surveys in nutrition. This I imagine, would naturally cover the examination of food budgets and the chemical analyses of meals.

We should regard these matters as survey records and not as nutrition research, for which latter, of course, the Medical Research Council must, as a Government body, retain the prime responsibility. (Mellanby to Marrack 13/4/43 MRC 2100/1a.)

(214) Marrack's first annual report recorded that the Bureau was located at the London Hospital, that he was helped by a Secretary and an Assistant Secretary. The Halley Stewart Fund provided a grant of £300/year for two years to cover office expenses and the Secretary's salary and the Ministry of Health paid for the Assistant Secretary. During the year two editions of a list of recent and current investigations were produced, the second edition listing 114 investigations of which 50 had been published. Marrack had visited research establishments in 14 different cities, and 7 local representatives of the Bureau were appointed. The Bureau had also facilitated the participation of six centres in a "comprehensive investigation on the relation of diet to the health of mothers and children." (Advisory Committee on Nutrition Surveys: Bureau of Nutrition Surveys. Report of the Director of the Bureau of Nutrition Surveys 30/3/44. PRO MAF 98/149.)

The efforts of the Bureau towards standardisation took on an international dimension in 1944 when the Advisory Committee decided that "the presence in Britain of scientists from many lands... afforded a unique opportunity for an attempt at standardisation". An informal conference, to which scientists from occupied and allied countries were invited, was therefore held in October 1944. The conference decided to constitute itself into the "Standing Advisory Committee for the Co-ordination of Methods of Survey in Liberated Territories" and three Panels were established - on Laboratory, Clinical, and Dietary Surveys Methods. This led to the preparation of a report recommending methods for nutritional surveys which was issued in August 1945. ("Recommendations with Regard to Methods of Investigation of Nutrition". Prepared by: The Standing Advisory Committee for Co-ordination of Methods of Survey in Liberated Territories. Issued by: The Advisory Committee on Nutrition Surveys of the Nutrition Society, English Group. Bureau of Nutrition Surveys, August 1945. PRO MAF 98/149.)

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(215) See this thesis, pages 234 - 5.

(216) See pages 210 - 1.

(217) Extract from "Final Act of the U.N. Conference on Food and Agriculture" NS Council Minutes Vol 2 1943 - 47. (United Nations (1943), 21.)

(218) Ibid.

(219) Ibid.

(220) Minutes of the First English Group Committee 2/7/43. The members of the Sub-Committee were Barcroft, le Gros Clark, Huggett, Bacharach and Marrack. NS English Group Committee Minutes 2/7/43 - 21/2/47.

(221) Committee on Nutrition Surveys: Financial Sub-Committee 30/7/43. NS Council Minutes Vol 2 1943 - 47.

(222) Minutes of the Second English Group Committee 4/8/43. NS English Group Committee Minutes 2/7/43 - 21/2/47. In October 1943 the Society also organised a scientific conference to consider the Hot Springs Resolution. Here Orr warned that the resolution would only be carried out fully if there was "well informed and strong public opinion in favour..." (Orr, (1944b)) and Professor Dryerre, of the Edinburgh Veterinary School urged that "...all present should take every opportunity of talking about the matter with their friends and supporting any organisation or meeting to which they have access, in order to voice their views and keep them firmly before the government to act as a driving force. (Dryerre, (1944))

(223) The Committee is referred to as the "Special Committee" in the Minutes of the Third English Group Committee meeting, 5/11/43, and as the Special Committee on Education in the Minutes of the Fifth English Group Committee meeting, 30/3/44. NS English Group Committee Minutes 2/7/43 - 21/2/47.

(224) Le Gros Clark became involved with the committees of the Society when the English Group Committee was established. He was appointed to the Financial Sub-Committee, and asked prepare a memorandum on the possible functions of a Nutrition Council at the First English Group Committee Meeting. The minutes of the Second English Group Committee Meeting record that the memorandum was discussed, but it is not present in the archives. (Minutes of the First and Second English Group Committee 2/7/43 and 4/8/43. NS English Group Committee Minutes 2/7/43 - 21/2/47.)

(225) CNC Nutrition Bulletin No 27. (August 1943).

(226) "Nutrition Education" [N.S.C., E.G. 3 5/11/43]. NS Council Minutes Vol 2 1943 - 47. For an article on the Hot Springs Conference by le Gros Clark, written a few months earlier, see Clark (1943a).

(227) The article distinguished between "Human Nutrition" and "Social Nutrition" or "Food Sociology" as follows:

Human Nutrition is... primarily concerned with finding out what people need in the way of food under various conditions of age, sex, climate and occupation. It investigates the processes of digestion and assimilation, the different nutrients... separately and in relation to one another, the deficiencies of greater or less degree that may attend an ill balanced or inadequate diet.

Human Nutrition... is fundamentally a matter of chemistry and physiology. Social Nutrition or Food Sociology deals, on the other hand, with the actual manner in which human beings, under varying conditions of culture and custom, choose, prepare and consume their food. It is concerned with the more or less fixed patterns of food habits and traditions, with established meal-times, with prejudices and taboos, with the relations between domestic feeding and communal feeding...

Such a science is the necessary foundation of any campaign of reform and instruction, since only thus are we theoretically equipped to undertake it. (CNC Nutrition Bulletin 34, Feb/March 1945.)

(228) The November 1943 English Group Committee Meeting had before it the Minutes of a Special Committee meeting which had taken place on 27/9/43 (which are absent from the archives.) The Special Committee was asked to continue its work on the problems of 1) co-ordination, 2) education, 3) a nutrition bulletin, 4) local societies, and 4) finance. The English Group Committee also asked the Special Committee to organise a small representative conference of bodies involved in nutrition education. This was to involve those organisations mentioned in the minutes of 27/9, and it was also suggested that the Society of Medical Officers of Health, the British Social Hygiene Council, the Ministry of Agriculture and the British Paediatric Association be asked to participate. The representative conference took place at the end of March 1944 under the Chairmanship of Lord Horder and was discussed at the May 1944 English Group Committee Meeting. The minutes of this meeting refer to a Special Committee meeting of January 1944 which suggested the establishment of a nutrition education bureau by the Society. The English Group Committee agreed with this

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suggestion, and proposed that further conferences should be held, twice a year, and that the Special Committee should "act as an Executive Committee with power to co-opt members of other organisations." (Minutes of Third and Sixth English Group Committee Minutes, 5/11/43, 4/5/44. NS English Group Committee Minutes 2/7/43 - 21/2/47.)

(229) The May 1944 English Group Committee meeting considered a memorandum by Miss Broatch, a dietitian employed by the King Edward's Hospital Fund for London and le Gros Clark on "Qualifications of persons in charge of the Provision of Food in Institutions, Industrial Canteens, Hospitals etc.". It was agreed that the Special Committee should call a meeting of representatives of the relevant bodies "...with a view to the formulation of a matured statement on the qualifications and status of managers and supervisors." It was also decided that Miss Broatch should be asked to attend meetings of the Special Committee. (Minutes of Sixth and Seventh English Group Committee Minutes, 4/5/44 and 21/7/44. NS English Group Committee Minutes 2/7/43 - 21/2/47.)

(230) In December 1944, at the request of Miss Broatch, Chairman of the Planning Committee, an Emergency Meeting of the English Group Committee was held after a Scientific Conference of the society. The Emergency Meeting considered the the request of the Royal Sanitary Institute and empowered the Planning Committee to enter negotiations on the question of the Nutrition Diploma. (Minutes of Special Emergency Meeting of the Committee of the English Group, 30/12/44. NS Council Minutes Vol 2 1943 - 47.)

(231) "The Training and Qualifications of Dieticians" N.S.C. E.G. 31/7/45. The Memorandum was discussed at the October 1945 English Group Committee Meeting. (Minutes of the Twelfth Meeting of the English Group of the Nutrition Society. NS Council Minutes Vol 2 1943 - 47.) For the Conference see Proceedings of the Nutrition Society 4 (3 & 4) 258 - 98.

(232) For the evidence regarding these points see footnotes 09, 32, 34, 213, and pages 194 - 6, 219 - 20. See also page 208 for intervention by Mellanby's assistant, Platt.

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(01) Rationing continued for some time after the war and the food policy of the Labour Government suffered considerable criticism in parliament and by the medical profession throughout its term of office. Due to the quotas set by the International Emergency Food Council (IEFC), bread and potatoes were rationed for the first time from 1946 - 8 and 47 - 8 respectively. Controls were gradually removed from 1949 onwards and rationing was completely abolished by 1954. Food subsidies were also all removed by this time apart from the subsidy on welfare milk. The Food Advice Division of the Ministry of Food continued to operate but its staff and activities were greatly reduced. The "British Restaurants" which were established during the war and which reached a peak of 2,140 in 1944, began to decline in number. They were transferred to Local Authority Control in April 1947 when they became "Civic Restaurants". By 1948 about two-thirds had been closed down or privatised. (For attacks on the Labour Government see British Medical Journal (1948) I 702, 790, II 76 - 7, 882 - 4, and (1949) II 1535. For the IEFC see Hambidge (1955), 62 - 4, Roll (1956), 297 - 301. For the end of rationing see Drummond, Wilbraham and Hollingsworth (1957), 465. See Clark (1949) for comments on the future of Food Advice. For "British Restaurants", see the Central Council for Health Education's Nutrition Bulletin Nov 1949 III (6).)

(02) The Scientific Food Policy Committee had actually long ceased activity, and its advisory role was fulfilled by the "Jameson Committee" and "Special Diets" Committee. (See Chapter Four footnotes 09 and 61.) During the post-war austerity, the Government was persistently questioned, in parliament and by the medical profession, about policy regarding the allocation of extra rations for invalids. This gave the Special Diets Committee, which was responsible for policy, and for considering appeals from individual patients, a new higher public profile. (See "Medical Notes in Parliament" British Medical Journal (1947) I 204 - 5, and "Food Rationing for Invalids", "Correspondence between the Secretary of the BMA and the Ministry of Food", and "Correspondence between Sir Edward Mellanby and Mr Strachey", 230 - 1, and "Annotation", 227.)

(03) See footnote 18.

(04) The acknowledgement of the success of Britain's wartime food policy was not only national but international. For example in 1947 the American Public Health Association awarded a prize to the "British Ministries of Food and Health and to the four great leaders of this historic enterprise, Lord Woolton, Sir Jack Drummond, Sir Wilson Jameson and Sir John Boyd Orr". (See Goodman (1970) 94.)

(05) For Sir Harold Himsworth see Chapter Four, footnote

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114.

(06) Medical Research Council (1951a), 5 - 6. These remarks echo those in Medical Research Council (1949), 13.

(07) Chick retired in 1946. See Chapter Two, footnote 75.

(08) T.F. Macrea was employed at the Lister Institute from 1932 - 46. (See Chick et al (1971).)

(09) My interviewee did not agree with this judgement.

(10) See Sinclair (1956).

(11) Cuthbertson, David (1900 -). Education includes: University of Glasgow, BSc 1921; MB, ChB 1926; MD 1937. Career includes: Lecturer in Pathological Biochemistry, Royal Infirmary and University of Glasgow 1934 - 45; Director of Rowett Research Institute 1945 - 65. (WW) For 'some' published indicators of these events see Thomson (1963) and Blaxter (1972).

(12) The Social Medicine Research Unit began work in January 1948. (See Medical Research Council (1949), 154.)

(13) Mill Hill was the location of the National Institute for Medical Research. My interviewee meant that Mellanby was predominantly a laboratory scientist.

(14) This conference took place in July 1946. See Proceedings of the Nutrition Society (1947) 5 (4), 211 - 368.

(15) Mellanby to Peters 7/3/46. MRC 2100/1a.

(16) The political dimensions of nutrition were, as in the 1930s not only national, but also international, see footnote 26.

(17) See footnotes 01, 02.

(18) The BMA Special Committee on Nutrition was formed towards the end of 1947 on the advice of the BMA Science Committee. Its initial members were: Lord Horder, Chairman, (Chapter Four, footnote 196), with Buchan, Mottram, Chick, and Cowell, (Chapter Two, footnote 291) Crowden, (Chapter Two, footnote 161) Drummond, (Chapter Four, footnote 28) Sinclair (Chapter Four, footnote 83), R.G. Gordon, (Member of Council, and Chairman of the Science Committee of the BMA), Jean Mackintosh (Senior Assistant Medical Officer of Health for Maternity and Child Welfare, Birmingham), R. Murray Scott (a G.P. from Leeds), J.G. Thwaites (a G.P. from Brighton, and Member of the BMA Council), R.E. Smith, (Medical Officer, Rugby School), and Donald Stewart,

(Member of the Industrial Health Research Board). Later Marrack, Yudkin, (see pages 258 - 9) R.W.B.Ellis, Professor of Child Life and Health, Edinburgh, F.Avery Jones, Senior Physician, Central Middlesex County Hospital, Mrs M.C.Bowley, and Mrs E.Hedlay-Pole were added to the committee. F. Le Gros Clark and F.Yates, (see Chapter Three, footnote 298 and Chapter Four, footnote 131) were co-opted onto Sub-committees. Four Sub-committees were established - on nutritional requirements (chaired by Drummond), family consumption (chaired by Cowell), clinical assessment, (Chaired by F.Avery Jones) and a sub-committee on practical dietetics which would "also consider the questions of morale and psychology in relation to diet", (chaired by Stewart.) The Report of the Committee was published in 1950. (See British Medical Journal (1947) II 922, (1949) II, Supplement, 91, (1950) I 541, and British Medical Association (1950) 4 - 5.)

(19) Obvious candidates for membership of the Committee would have been Platt, McCance, Widdowson, Harris and Mellanby himself. Significantly perhaps the BMJ noted, when announcing the establishment of the Committee, that four people had "found it impossible to accept membership." (BMJ (1947) 2 922.) The meetings were attended by "observers and advisers" from the Ministries of Health and Food, but there was no such participation by the MRC. An additional suggestion of conflict with the MRC is provided by the opening paragraphs of the Report which were as follows:

When the Council of the British Medical Association decided to set up a Committee on the Nation's Nutrition the wisdom and utility of such a step did not go unchallenged. Two questions were asked. Why should an inquiry be undertaken by a body which is not itself primarily concerned with research in any part of this particular field? And why try to anticipate results of a more convincing character which would doubtless be made known in time, when researches now afoot by groups eminently qualified to undertake them are completed?

The answer to the first question is that, provided the Association could convene a committee which should consist of men and women deeply interested in the subject, who knew the language of science, and who were themselves engaged in certain of its aspects - a provision which quickly proved to be possible - such a body might be even better fitted to undertake a general view of the subject than a group whose work was limited to one special branch of it. The answer to the second question is that inquiries of the kind under consideration are never really completed. And yet the knowledge available at any moment is of such practical value that an

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"interim report" of it is well worth having. To wait for ultimate academic conviction is to deny to current Medicine and Social Economics the day-to-day service rendered by the application of well-accepted principles. (British Medical Association (1950), 7.)

(20) For an outline of the post-war work at the Dunn, see Medical Research Council (1949), 111 - 7, (1951a), 75 - 6, and (1953), 81 - 2.

(21) In addition, immediately after the war, the MRC took the opportunity offered by social conditions in Europe to conduct research into certain nutritional problems. R.A. McCance was placed in charge of a Research Unit in Germany, and the research conducted included a comparison of the nutritional value of white and brown bread. (See McCance and Widdowson, (1956) and Widdowson and McCance (1954). Also Medical Research Council (1951b) and Dean (1953).) The possibilities for post-war research in Europe, had been discussed at Accessory Food Factors Committee meetings during the war, and also at a Nutrition Society meeting in November 1943. (See MRC Minutes of AFFC meetings 22/3/43, 22/7/43, 17/8/43, and "Sub-Committee on Opportunities for Nutritional Research in Post-War Europe" meeting 25/7/44, Hume (1944) and Proceedings of the Nutrition Society (1944) 2 (3 & 4), 210 - 15.) In view of the success of the work of Chick and her colleagues on rickets in Vienna after the First World War, conducting research in post Second World War Europe was an attractive proposition.

(22) See Chapter Four, footnote 137.

(23) The Unit for Research in Human Nutrition began work at the beginning of 1944. It was provisionally based at the National Hospital, Queen Square, London, and later moved to the MRC laboratories, firstly at Hampstead and then at Mill Hill. (Medical Research Council (1947), 103.)

(24) Platt also visited the West Indies in 1944, and West Africa in 1945. A Colonial Medical Research Committee was established of which he was made a member. Soon after the war a field station of the Unit was established in Gambia, which was also directed by Platt. (Medical Research Council (1947), 103, (1949), 33, (1956), 58.) See also Platt (1946) and the Nutrition Society conference on "Nutrition in the Colonies" held in March 1946. (Proceedings of the Nutrition Society 5 (1 & 2), 1 - 43.)

(25) See "Trends in Research in Human Nutrition" in Medical Research Council (1955), 21 - 5, where it is stated that "It is generally agreed that the most widespread and serious deficiency throughout the world is shortage of

protein of good biological value." See also "Protein deficiency in man" in Medical Research Council (1957), 25 - 9.

(26) The Food and Agricultural Organisation (FAO) of the United Nations was conceived at the Hot Springs Conference in 1943. (See pages 221 - 2.) For the proceedings of Nutrition Society conferences on "The Hot Springs Conference", and "The Nutritional Work of FAO, WHO and UNICEF" see Proceedings of the Nutrition Society 1944 2 163 - 76, and 1946 15 1 - 71. For an account of events during the two year period following the Hot Springs Conference see the Childrens' Nutrition Council Nutrition Bulletin No 35, June and July 1945) and United Nations Information Organisation (1945).) Orr became the first Director-General of the Organisation, against the wishes of the British Government at its first conference in Quebec in 1945. At the Second Conference, in Copenhagen in September 1946, Orr advocated the establishment of a "World Food Council", which would have the power to fix world food prices, to buy up "buffer stocks" of food, and to distribute that food to those nations in need. The British Government however mobilised other nations to defeat the scheme at the Washington FAO meeting in Washington in April 1947, which resulted in Orr's resignation. (Hamilton (1979), Lubbock (1963).) The defeat of Orr's plan caused consternation among some members of the radical wing of the Nutrition Society. (See British Medical Journal (1947).) After the defeat of Orr's plan the work of the FAO gradually became almost exclusively that of searching for scientific and technical rather than political and economic solutions to world food problems. A Joint Nutrition Committee with the World Health Organisation (WHO) was established, and means of increasing production of high quality protein became the major concern. This programme was overseen from 1955 by the WHO's Protein Advisory Group. (See World Health Organisation (1965), Lowenberg et al (1974) 352 - 8, 668 - 95.)

(27) McCance to Marrack 12/5/45. (NS Council Minutes 1943 - 47.)

(28) Marrack to McCance 4/6/45. (Ibid.) For McCance see Chapter Four, footnote 65.

(29) Widdowson, Elsie May (1906 -) Education includes: Imperial College, London, BSc, PhD. Career includes: Courtauld Institute of Biochemistry, Middlesex hospital, 1931 - 33; King's College, London 1933 - 38; Cambridge University, Department of Experimental Medicine, 1938 - 66. (WW)

(30) Widdowson to Marrack 30/6/45. (NS Council Minutes 1943 - 47.)

(31) See Werskey (1978), 281 - 5. Also, McGucken (1978), Shils (1947), Baker (1970), Wood (1959), 134 = 6, Committee of The Society for Freedom in Science (1953). I have been unable to find any evidence of McCance and Widdowson's involvement with the "Society for Freedom in Science" (founded 1941). This is however, as might have been expected, for involvement with this Society would probably have been frowned upon by Mellanby, in view of what we have already learnt about Mellanby's attitude to "outside" organisations. As McCance directed the MRC's Unit in Germany after the war, he almost certainly enjoyed a relatively harmonious relationship with Mellanby.

(32) Minutes of Twelfth Meeting of the Committee of the English Group 6/10/45. (NS Council Minutes 1943 - 47.)

(33) Ibid.

(34) Ibid., and Minutes of Fifteenth Meeting of the Committee of the English Group 20/9/46. (NS Council Minutes 1943 - 47.)

(35) J.A.K.Christie, Private Secretary, Privy Council Office to Marrack 6/9/46. (N.S.C., E.G., 1, 20.9.46.) The Nutrition Society delegates who were appointed to meet the Ministry of Health Officials were Barcroft, Bacharach, Dr C.F.Brockington (Medical Officer, Warwick), Marrack, and Harris. The delegates were instructed to restrict the interview to the "specific problem of the financing and future activities of the Bureau... and that recommendations on wider matters should not be made." Minutes of Fifteenth Meeting of the Committee of the English Group 20/9/46. (Ibid.)

(36) Minutes of Twelfth Council Meeting 12/12/46. (Ibid.)

(37) "For the information of English and Scottish Group Committees." C.W.Marrit, Ministry of Health to Harris 24/12/46. (NS Council Minutes Volume 2 1943 - 47.)

(38) Minutes of Thirteenth Council 21/2/47. (Ibid.)

(39) Minutes of Sixteenth Council 9/6/48. (NS Council Minutes Volume 3 1944 - 62.)

(40) The Central Council for Health Education was established in 1927. After the war it took over the CNC Nutrition Bulletin, which le Gros Clark continued to edit. See the CNC Nutrition Bulletins of August and October 1946. For some of le Gros Clark's other post-war activities see London Council of Social Service (1947) and (1948), and Clark (1947a, b, c), (1948).

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(41) Minutes of Seventeenth Council 16/10/48. (NS Council Minutes Volume 3 1944 - 62.) At the same meeting, the Minutes record that Bacharach "brought to the notice of the Council" the fact that the "Annual Report of the Advisory Council on Scientific Policy" contained a section on nutrition. He commented that the Advisory Council had "obviously obtained expert advice on nutritional problems, but no such approach had been made to the Nutrition Society, which might appropriately be consulted." The Nutrition Society Council however decided that "...no official action should be taken." (For Advisory Council on Scientific Policy see Gummett and Price (1977).)

(42) At the First Committee Meeting, for example, Orr stated that he hoped the Scottish and English Groups would unite after the war. (Minutes of First Committee Meeting, 5/8/41. NS Committee Minutes 5/8/41 - 19/3/43.) In addition in November 1941 at the Fourth Executive Committee, when it was reported that Orr had asked Professor Garry of St Andrews University (see footnote 80) to organise the Scottish Group, it was repeated that the Scottish Group would be regarded as an Emergency Committee for the duration of the war only.

(43) See, for example Orr's Circular letter. (NS Council Minutes Vol 1 1941 - 2.)

(44) It was decided at the Third Executive Committee meeting in November 1941 to circulate cyclostyled copies of the proceedings of meetings. (Minutes of Third Executive Committee Meeting 15/11/41. NS Early EC Minutes.) Later the President of the Royal College of Physicians (Sir Charles Wilson), suggested that he might help the Society financially in starting a proper journal and Harris wrote to him in March 1942 suggesting that the existing "Proceedings" could be expanded in two possible ways. Firstly, the Society could start publishing a journal in which papers would be given in full, and to which could be added an "annotation by the Committee expressing the general upshot of the discussion and indicating... what could be done about it". Secondly, the Society could start a journal "in a fuller sense", which would include papers sent in for publication, as well as proceedings of meetings. Harris also asked Wilson what help he would be able to give in overcoming publication difficulties. (Harris to Wilson 3/3/42, NS Committee Minutes 5/8/41 - 19/3/43.) Wilson replied that he thought it would be wise to "go for a full journal". He told Harris that he was unable to say how successfully he could intervene with the authorities, but promised: "...as I think that it would be of service to the country [a new nutrition journal] I would not hesitate to go to the PM." (Wilson to Harris 9/3/42. Ibid.)

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(45) The sub-committee consisted of Barcroft, Harris, Kon, Platt, Bacharch and Cruikshank. Ibid.

(46) Minutes and Report of Sub-Committee on Publications 21/3/42. NS Committee Meetings 5/8/41 - 19/3/43. At this stage the idea of including an "editorial annotation" was still included in the plan for the new journal. It was later dropped, but there is no record of how this happened.

(47) The paper controller, on the recommendation of Wilson gave permission for 500 copies of the first issue of the proceedings to be printed. (The paper controller, Ministry of Supply to Harris 1/8/42. Ibid.) However the Nutrition Society Committee thought that printing so few would defeat the object of the Royal College of Physicians' financial assistance, which was to make the Nutrition Society's proceedings widely available to medical men. (Minutes of Sixth Committee Meeting 10/8/42. Ibid.) It was felt that 400 copies would be needed for members, 600 for agriculturalists and medical men, and 200 overseas and library copies. Negotiations with the Paper Controller, through Wilson, therefore continued until more paper was made available. (Minutes of Seventh Committee Meeting 16/9/42. Ibid.)

(48) At the Fifth Committee meeting 30/5/42, a letter from Orr expressed the doubts of the Scottish Group regarding the starting of a journal. It was suggested that this must have arisen because the Scottish Group were probably unaware of the offer of financial help from the Royal College of Physicians. Barcroft was asked to meet the Scottish Committee and to explain the situation. (NS Committee Meetings 5/8/41 - 19/3/43.)

(49) Following the difficulties mentioned in the previous footnote, the Scottish Group were not satisfied with their status under the Rules and by Laws of the Society, and they proposed a meeting of delegates of both Groups, to consider the position. The September 1942 General Committee meeting passed a resolution which "regretted that misunderstanding had arisen between the two committees" and agreed to the suggestion for a delegates meeting. (Minutes of the Seventh Committee meeting 16/9/42. Ibid.) The delegates' meeting, in November 1942 discussed the formulation of a new constitution which would contain a "Wartime Emergency Rule", which would include the statement, just quoted in the text, that "...no decisions affecting the permanent policy of the Society as a whole should be taken without the consent of all the local group committees". Over the following twelve months the new constitution was discussed at several further meetings, including a further delegates' meeting and the Scottish and English Annual General Meetings in May 1943. Parts of the new constitution were voted on and implemented during this time. For example,

under the new constitution the overall government of the Society was now the responsibility of a National Council, while the English and Scottish Groups were run by separate Group committees. The Council first met in September 1943. But there were still parts of the constitution to be ratified, including the Wartime Emergency Rule. This was discussed by the Scottish Committee in November 1943, when it was noticed that there was now a change in the wording of the Rule, so that the phrase stating that the consent of Group Committees was required for permanent policy changes was omitted. J.A.B. Smith, Secretary of the Scottish Group, wrote to Harris to clarify the situation, and Harris replied that the rule had already been agreed by previous meetings and that there was no cause for complaint. However, in March 1944, Smith wrote again to Harris and apologised that again the Scottish Committee had unanimously rejected the rule as it stood, and asked for it to be changed back to its original form. The following Council meeting agreed to this and the matter was settled by unanimous votes at the English and Scottish Group AGMs in May 1944. (Smith to Harris 9/11/43, 22/11/43, 15/3/43, Harris to Smith 12/11/42, 25/11/43, 20/3/44. N.S.C. E.G. 2 30/3/44. Second meeting of Council 22/4/44. NS Council meetings Volume 2 1943 - 47.)

(50) The letter from The Lancet referred to a letter from an anonymous doctor who had apparently experienced difficulties in getting his papers on nutrition published. Harris replied that since the founding of the Proceedings of the Nutrition Society had only been allowed after a good deal of high-level lobbying, it was unlikely that any expansion would be allowed at the moment. (Lancet to Harris 25/5/44. N.S.Cl. 1. 21/11/41. NS Council Meetings Volume 2 1943 - 47.) Also before the Council was a letter from Hugh Clegg of the BMJ to Kon, which intimated that the BMA were considering publishing a British Journal of Nutrition. (Clegg to Kon 13/10/44 N.S.Cl. 2. 21/11/41. NS Council Meetings Volume 2 1943 - 47.)

(51) Leitch, Isabella. Member of Staff, Rowett Research Institute 1923 - 9, Member of Staff, Commonwealth Bureau of Animal Nutrition 1929 - 60. (Cuthbertson, (1963a) xiv. See also Thomson (1981).) Leitch was dissatisfied with the Nutrition Society's post-war organisation and activities, and she eventually resigned from the Council of the Society and the Editorial Board in May 1949. In her letter of resignation she told Cowell: "I am of the opinion, as I have always been, that the constitution [of the Society] is unsound; that the Society is not expanding as it ought to do; and as far I am concerned, the work of reading papers for the Journal has been all out of proportion to the... publishable work." (Leitch to Cowell 25/5/49. NS Publications 1946 - 49.) Several interviewees who I questioned about Leitch's resignation, suggested that her

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disatisfactions stemmed from the feeling that the British Journal of Nutrition should have been based at the Commonwealth Bureau of Animal Nutrition. (For the Commonwealth Bureau of Animal Nutrition see Chapter Three, footnote 314.)

(52) This Council Meeting also discussed a number of minutes of a Scottish Group meeting (of 13/1/45) which were tacitly critical of various activities of the English Group. The Scottish Group enquired about the status of the Committee on Nutritional Surveys and the Special Committee on Education. The Council was asked to consider whether "one group of the society has any constitutional powers to proceed on its own with important activities of this kind." In addition concern was expressed that the elementary nutrition certificate which the the Royal Sanitary Institute was developing in collaboration with the Planning Committee would be confused with the advanced training in dietetics at the Glasgow and West of Scotland College of Domestic Science. (Minutes of Fourth Meeting of Council 16/3/45. NS Coucil Meetings Volume 2 1943 - 47.)

(53) Minutes of Twelfth Committee Meeting of the English Group 6/10/45. NS Coucil Meetings Volume 2 1943 - 47.)

(54) Minutes of Twelfth Council Meeting 12/12/46. NS Coucil Meetings Volume 2 1943 - 47.

(55) Constitution B was chosen by 137 to 111, and Bacharach and Garry were asked to make the necessary arrangements for its implementation. (Ibid.)

(56) Regretably the records relating to these important changes in policy are particularly sparse and there appear to be minutes of six Council Meetings (between 4/3/45 and the 12/12/46), and a Business Meeting of September 1946, missing from the archives. It appears that the decision to begin "open scientific meetings" hinged on the decision to expand the Journal, for the Minutes of the English Group Committee meeting of September 1946 record that "In view of the decision to found a new Journal containing original papers", it was decided... that it would be advantageous to hold an "open" scientific meeting, to which members would be invited to submit communications." (Minutes of English Group Committee Meeting 20/9/46. NS Council Minutes vol 2 1943 - 47.)

(57) Brown to Harris 28/10/46. NS Council Minutes vol 2 1943 - 47.

(58) Robson to Harris 29/11/46. NS Council Minutes vol 2 1943 - 47.

(59) See footnote 56.

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(60) As if to emphasise the turn away from practical matters, the first "Open Scientific Meeting" organised by the English Group as soon as the decision had been taken to start a new journal, took the place of a conference which had previously been planned on the "Food situation in Europe". (Minutes of Fifteenth English Group Committee Meeting 20/9/46. NS Council Minutes Volume 2 1943 - 47.)

(61) See British Journal of Nutrition 1 (1947) 85 - 107. The criticisms of the facilities for home economics teaching in schools were made by J.Kirkland of Showlands Secondary School. (Kirkland (1947).)

(62) See British Journal of Nutrition 2 (1948), 77 - 87.

(63) British Journal of Nutrition 3 (1949) 375 - 406. The Principal of the Domestic Science College was Miss I.S.Gibson, and for the paper by one of the lecturers see Andross, (1949).

(64) See British Journal of Nutrition 2(1948) 176 - 204. For the paper by the Domestic Science College Lecturers see Craig et al (1948).

(65) See British Journal of Nutrition 3 (1949), 347 - 74.

(66) See British Journal of Nutrition 3 (1949), 243 - 92.

(67) See British Journal of Nutrition 4 (1950) 225 - 68.

(68) See "Results of Recent Investigations of Nutritional Status in Great Britain" British Journal of Nutrition 2 (1948 - 9), 147 - 75.

(69) See British Journal of Nutrition 3 (1949), 79 - 107.

(70) See British Journal of Nutrition 2 (1948 - 9), 362 - 410.

(71) See British Journal of Nutrition 5 (1951) 5, 94 - 142.

(72) See British Journal of Nutrition 4 (1950), 49 - 93.

(73) See British Journal of Nutrition 2 (1948), 249 - 73.

(74) See Needham (1948 - 9).

(75) See British Journal of Nutrition 2 (1948 - 9), 331 - 362.

(76) Minutes of the Fifteenth Meeting of the English Group Committee 20/9/46. (NS Council Minutes vol 2 1943 - 47.)

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(77) See Minutes of the Twelfth, and Thirteenth Council Meetings, (12/12/46 and 30/6/47), (NS Council Minutes vol 2 1943 - 47) and Fifteenth to Eighteenth Council Meetings (30/6/47, 9/6/48, 16/10/48, 27/5/49), (NS Council Minutes vol 3 1947 - 62) for progress reports on the supply of original papers.

(78) Owen, E.C. (1905 -) Education includes: University of Western Australia, BSc 1931; University College, London, MSc 1937. Career includes: Rowett Research Institute, 1937 - 39. Hannah Dairy Research Institute, Head of Nutrition Department 1937 - 39. Head of Biochemistry Department 1947. (Aberdeen Roll of Graduates 1926 - 55).

(79) Kon to Owen 15/5/50. (NS Publications 46 - 55)

(80) Garry, Robert Campbell, (1900 -). Education includes: Glasgow University, MB, ChB 1922. Career includes: Assistant and then Lecturer, Institute of Physiology, Glasgow University; Head of Physiology Department, Rowett Research Institute and Lecturer on the Physiology of Nutrition, Aberdeen University, 1933 - 35. Professor of Physiology, St Andrews 1935 - 47. Regius Professor of Physiology, Glasgow University 1947 - 70. (WW)

(81) Davidson, James Norman (1911-72). Education includes: Edinburgh University, BSc Chemistry 1934, MB ChB, 1937. Career includes: Lecturer in Biochemistry, St Andrews 1938 - 40; Aberdeen 1940 - 45; Professor of Biochemistry, St Thomas's Hospital Medical School 1946 - 47; Professor of Biochemistry, Glasgow University 1947 - 72. (WW)

(82) Meiklejohn, Arnold Peter. Education and career includes: Oxford University, MA, BSc; St Mary's Hospital, London, BM BCh 1935; Radcliffe Travelling Fellow 1936; Peabody Fellow, Harvard Medical School, 1938; Senior Lecturer in Nutrition, Department of Medicine, Edinburgh University; Died 1961. (Med Dir) Obituary: Scottish Medical Journal (1961).

(83) Minutes of Editorial Board Meeting 32/9/50. (NS Publications 46 - 55.)

(84) Minutes of Scottish Group Committee Meeting 13/10/50. (NS Scottish Group Committee Meeting.)

(85) This is BJN/SM/51/1, 18/5/51 by Bacharach and Kon, which is mentioned in, "British Journal of Nutrition", July 30th 1951 by Garry (President), Bacharach (Treasurer), Cowell (Secretary) and Kon (Editor). (NS Publications 1946 - 65.)

(86) Garry to Bacharach 2/7/51. NS Publications 1946 - 65.

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(87) Bacharach to Garry 4/7/51. Ibid.

(88) Ibid.

(89) "British Journal of Nutrition", July 30th 1951 by Garry (President), Bacharach (Treasurer), Cowell (Secretary) and Kon (Editor). (NS Publications 1946 - 65.)

(90) The September 1951 Conference in Aberdeen, in typical "popular" Scottish style was entitled "All Flesh is Grass". (British Journal of Nutrition 6 (1952), 94 - 124.)

(91) Stewart, James (1903 -) Education includes: Caius College Cambridge; Aberdeen University. Career includes: Head of Biochemistry, Animal Diseases Research Association, Edinburgh. (WWBS)

(92) Minutes of the Committee Meeting of the Scottish Group of the Nutrition Society 22/9/51. NS Scottish Group Minutes.

(93) Bacharach and Kon "British Journal of Nutrition" 2/11/51. BJN/SM/51/3. NS Publications 1946 - 65.

(94) See Section 4.2. I do not intend to imply that Kon's motives in organising the Informal Conferences of Nutrition Workers were necessarily political. I am only suggesting that since the Conferences began to lobby government departments and that Mellanby reacted in the way he did, that Kon, as originator and organiser of the conferences, would have been regarded by others, at least for a time, as a member or associate of the more radical section of the Society.

(95) The most detailed evidence of Bacharach's political affiliations is provided by Kay Macleod in her history of the Association of Scientific Workers. (ASW) Macleod notes that in 1915 Bacharach was involved in a breakaway from the Fabians to form the National Guild Socialist League, and that he became a close friend of G.D.H. and Margaret Cole, and was a prominent member of the Labour Research Department. He was also a member of the Scientific Advisory Committee of the Labour Party which was established in 1923 and which met regularly for six years. Bacharach was one of the most active members of the National Union of Scientific Workers (NUSW) and was a member of or sympathiser with a communist cell established in 1923. He took the left's side in the mid-1920s in debates on the future of the NUSW, and was the leading left-winger in the later 1920s after the Union was transformed into the ASW. He was on the ASW Executive during the early 1930s when its fortunes were on the upturn and was among the 25 signatories of a National Peace Council's protest against aerial bombing in 1935. (Macleod (1975), 96, 98, 203, 151, 225, 218, 238, 337,

360.) I asked many of my interviewees about Bacharach's politics and they were nearly all aware that he was left-wing, although none could say for certain whether or not he had been a member of the Communist Party.

In 1941, when the Nutrition Society was established Bacharach was anxious to keep the qualifications for membership wide. He advocated this view at the inaugural meeting, and later sent Cruikshank two lists of names, one of which was of "people in industry, journalism and consulting practice", and the other of which was "names of people who might, for some reason or another be overlooked by other members of the EC". Unfortunately these lists have not survived, but the fact that Bacharach envisaged journalists belonging to the Nutrition Society indicates that at that time it was not a strictly scientific society which he had in mind. (Minutes of Inaugural Meeting 23/7/41. NS Council Meetings Volume 1 1941 - 2.)

(96) Before the English Group Conference on the "Training and Qualifications of 'Dieticians'", which took place in November 1945, the "Planning Committee" prepared a memorandum on the subject which was discussed at an English Group Committee meeting in October. The minutes record that at this meeting there was a long discussion about the definition of "dietician", and that Bacharach, Kon and Marrack had together sent in written criticisms of the definition of "dietician" in the memorandum. Remarks made by Bacharach during the discussion at the Conference indicate the nature of the objections which he, Marrack and Kon had had for the Planning Committee's memorandum:

There has been a great deal of difference of opinion among the medical profession and the general public about the desirability of nationalising the hospitals, but no difference of opinion about the undesirability of hospitalising the nation. This emphasis on the hospital work of dieticians [in the memorandum and at the meeting] does seem to bring with it a certain lack of sense of proportion: it runs counter to the social application of modern nutritional knowledge...

...the whole question of training and qualifications of dieticians must be considered, not from the point of view of the person who is going to be a hospital dietician, but primarily from the point of view of those who are going to be first school caterers, then industrial, then non-industrial, and then hospital caterers. We should be taught first of all, not how to feed sick people to help cure them, but how to feed healthy people to keep them well...

(Minutes of the Twelfth English Group Committee Meeting 6/10/45. NS Council Minutes Volume 2 1943 - 47, and Bacharach (1946). For Marrack's politics see Chapter Four

footnote 211.)

(97) The changes in Bacharach's ambitions for the Nutrition Society between 1941 and 1951 should not be taken to indicate that he necessarily changed his political views during this period. It would be quite possible for Bacharach to have actually become closer to the Communist Party, for, as Werskey has pointed out, the first duty of a Communist scientist was to be a good scientist. A better view is that due to broader changes in society by 1951 it had become strategically advantageous for Bacharach to espouse the ideology of pure science. (Werskey (1978), 330.)

(98) Copping (1978), 110 - 111.

(99) Garry was, for many years, Chairman of the MRC's Diet and Energy Committee. (This Committee is first mentioned in the MRC Report for 1948 - 50, 214, and was last mentioned in the MRC Report for 1965 - 66, 280.) For some work by Garry for this Committee see Garry et al (1955). Garry also chaired a Nutrition Society Meeting on "Energy and Food" in October 1955. See Proceedings of the Nutrition Society 15, 72 - 99.

(100) Garry opened his presidential address on "The Nutrition Society of Britain, the First 12 Years" to the "Lind Bicentenary Symposium" in Edinburgh in May 1953 as follows:

Specialization seems to be the price we must pay for advancement in science. And too often the specialist, as he pursues his own line of inquiry, erects a barrier of new technical processes, of new scientific jargon, between himself and his former colleagues. This process of disintegration may add to sum total of knowledge... but it has almost exactly the opposite effect on the individual scientist...

This centrifugal process is limited to some extent in biology where all the scientific workers ought to have a common interest in the single whole, the living organism. This organism is an entity maintaining its integrity for a period of time in the face of a physical external environment...

Yet we still lack a common meeting ground where scientific workers in biology may from time to time find refreshment.. Is it fanciful to see in the study of nutrition this common interest which can bring us all together?

Garry referred to the view of the inaugural meeting in 1941 that the Nutrition Society should provide a "common meeting place for workers in the varied fields of nutrition" (see page 204), and continued:

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It is doubtful if nutrition is a science in the common sense of the word. To make such a claim is probably to do the study of nutrition a disservice... the scope of nutrition is so wide that it is wise to regard it as a meeting place of sciences and of scientists than as a single scientific discipline. The study of nutrition then calls a halt in the biological sciences to the fission and centrifugal tendencies so characteristic of the present time. (Garry (1953).)

Significantly, Garry's remarks were made at about the same time that John Yudkin was claiming to have formulated a university degree course in which nutrition could be studied as a "new entity" and which would provide training for "real nutritionists" at Queen Elizabeth College. The "Lind Bicentenary Symposium" followed a Nutrition Society Meeting in March 1953 at which the new course had been discussed. (See pages 265 - 6.) That Garry's remarks were directed at Yudkin are suggested by one Scottish interviewee told me that "there was... a sort of anti-Queen Elizabeth College thing for awhile... which emanated from up here... I think from Isabella Leitch and Garry..."

For remarks by Cathcart about the fragmentation of science see his article in the first number of Nutrition Abstracts and Reviews. (Cathcart (1931c).)

(101) See page 243. This idea of nutrition also appears in Garry's published work, and was later quoted by others. (See, for example the last footnote and Thomson (1978) 325.)

(102) See Chapter Two, footnote 96, and see Garry's reference to "teachers of domestic science science in colleges and schools" on page 243.

(103) Magee to Bacharach 27/8/51. (NS Publications 1946 - 65.)

(104) Ibid.

(105) Ibid.

(106) Bacharach to Magee 28/8/51. (NS Publications 1946 - 65.)

(107) Magee to Bacharach 29/8/51. (NS Publications 1946 - 65.)

(108) See pages 209 - 10.

(109) I have taken the title of this section from the name of the relevant file in Nutrition Society archives.

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(110) See page 232.

(111) Mellanby (1946), (1947).

(112) Mellanby's discovery aroused a great deal of interest among politicians, the medical profession and the public. For Editorials in the medical journals see: The Lancet (1947) II 284, (1948) I 27 - 8, (1949) I 107, and the BMJ (1947) II 963, (1950) I 295. For a reference to a doctor who claimed at an inquest that a man had murdered his family and killed himself due to agene, and that practically every patient that he saw was suffering from agene poisoning see: The Lancet (1951) I 741. For some references to questions about agene, and mention of agene in debates in the Houses of Parliament see: The Lancet (1947) I 197, (1948) II 1029, (1949) I 205, II 1159, (1951) II 986 and 1035, (1952) I 308, (1953) II 1269, 1954 II 1072, BMJ (1952) I 614, (1953) I 841, (1954) II 405. Soon after Mellanby's first paper on agene a Committee under Sir Wilson Jameson was established to consider the problem. This consisted of representatives of the Ministries of Food and Health, the MRC and the Milling Industry. It issued a statement in late January 1950 reassuring the public that there was no evidence that agene is toxic to man, but also recommended a substitute which is less toxic to other species. However, an "Annotation" in The Lancet at this time shows that Mellanby's views on the issue were less clear-cut. The "Annotation" commented: "The toxicity of agenized flour to dogs must have produced disquiet in many minds, and Sir Wilson Jameson's Committee was wise to stress twice that there is no evidence that it is harmful to man." It then continued: "Oddly enough, two earlier public statements - the first in the BBC News Bulletins on Jan 25th, based on the MRC Report for 1945 - 8 which was issued on that day, and the other by Sir Edward Mellanby in a broadcast on January 27 - were not so definite." (See The Lancet (1950) I 227.) For an overtly speculative speech by Mellanby (1951). B.S.Platt later also made a similar speculative speech. (Platt (1955).)

(113) "Extract from Times 11/6/53. Debate in the House of Lords 10/6/53". (NS Agene Fiasco.)

(114) Bourne, Geoffrey (1909 -) Education includes: University of Western Australia, MSc 1932. Career includes: Biologist in charge of experimental work, Australian Institute of Anatomy 1933 - 35; Biochemist, Commonwealth of Australia Advisory Council on Nutrition, 1935 - 37; Beit Memorial Fellow for Medical Research, Oxford 1938 - 41; Research in Physiology, Oxford, 1941 - 44, 46, 47; Military Service 44 - 45, 46 - 47; Reader in Histology, University of London at London Hospital Medical College 1947 - 57; Professor and Chairman of Anatomy, Atlanta, USA, 1962 - 78. (WW)

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(115) Bourne to Orr 11/6/53. (NS Agene Fiasco.)

(116) Bourne to Members of Council 22/6/53. (Ibid.)

(117) Ibid.

(118) Passmore, Reginald. Education and career include: BM BCh (1st Cl Honrs Sch Physiology 1931) 1935, Oxford University, St Mary's Hospital; Lt-Col, Indian Medical Service; Assistant Director, Nutrition Laboratory, Coonoor, South India; Senior Lecturer in Clinical and Industrial Physiology, Reader in Physiology, Edinburgh University. (Med Dir)

(119) C.P.Stewart, Clinical Biochemist, Edinburgh University and Royal Infirmary, Edinburgh.

(120) Robertson to Bourne 25/6/53. (NS Agene Fiasco.)

Robertson, A. (1908 -) Professor of Veterinary Hygiene 1944 - 53, William Dick Professor of Animal Health 1953 - 71. (WW)

(121) Passmore to Bourne 25/6/53. (NS Agene Fiasco.)

(122) Stewart to Bourne 25/6/53. (NS Agene Fiasco.)

(123) Blaxter, Kenneth Lyon. Education includes: University of Reading. Career includes: Scientific Officer, NIRD 1939 - 40, 41 - 44; Research Officer, Ministry of Agriculture Veterinary Laboratory, 1944 - 46; Head of Nutrition Department, Hannah Dairy Research Institute, 1948 - 65; Director Rowett Research Institute, 1965 - 82. (WW)

(124) Blaxter to Bourne 9/7/53. (NS Agene Fiasco.)

(125) Garry to Bourne 8/7/53. Ibid.

(126) Washington to Bourne 26/6/53. (NS Agene Fiasco.)

(127) Burn, John Lancelot D.P.H., B.Hy. 1933, M.D. 1933. Medical officer of Health, Salford. (Med Dir.)

(128) Burn to Bourne 23/6/53. (NS Agene Fiasco.)

(129) For Krebs, see Chapter Four, footnote 191.

(130) Krebs to Bourne 1/7/53. (NS Agene Fiasco.)

(131) Sinclair to Bourne 29/6/53. (Ibid.)

(132) Harris to Himsworth 24/6/53, Harris to Bourne 24/6/53, Bourne to Harris 30/6/53 Orr to Himsworth 2/7/53,

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Bourne to Harris 7/7/53 Harris to Bourne 10/7/53. (Ibid.) The Food Adulterants Committee is first listed in the MRC Report for 1948 - 50, 215, and is last listed in the MRC Report for 1956 - 7, 172. It was chaired throughout its existence by R.A.McCance.

(133) Bourne to Members of Council 16/7/53. (NS Agene Fiasco.)

(134) During the 1930s J.G.Crowther had been, as Guardian science writer, an ally of, and propagandist for, the social relations of science movement. See Werskey (1978), 239 - 40, and Crowther (1970).

(135) See Werskey (1978), 276 - 277.

(136) The meeting took place on 26/10/53 in London.

(137) Memorandum to Members of Council 19/11/53. (NS WFSW)

(138) WFSW Questionnaire on the Economic and Working Conditions of Scientific Workers. (Ibid.)

(139) Ibid.

(140) See page 234.

(141) Werskey (1978) 239, 270 - 271 on planning and 308 on the World Federation of Scientific Workers. Macleod (1975) Chapter 7 discusses the rise of the Association of Scientific Workers and the planning movement in the 1930s.

(142) McCance to Bourne 30/10/53, circulated with memorandum "To members of Council", 19/11/53. (NS WFSW.)

(143) Bourne to McCance, circulated with memorandum "To Members of Council", 19/11/53. (Ibid.)

(144) Harris to Bourne, 18/11/53. (Ibid.)

(145) Ibid.

(146) Ibid.

(147) The officers of the WFSW were: President - F.Jolio-Curie. Vice Presidents - J.D.Bernal, Li Tze-Kwang, Academicians Sinica and Oparin, Linus Pauling, C.F.Powell. Tresurer - W.A.Wooster. (From letterhead of Crowther to Bourne 21/9/53, NS WFSW.)

(148) Harris to Bourne, 18/11/53. (NS WFSW.)

(149) Bourne to Harris, n.d., written by hand on the back of Harris to Bourne, 18/11/53. (Ibid.)

(150) "To Members of Council", 30/11/53. (Ibid.)

(151) Harris to Bourne, 25/11/53, circulated with "To Members of Council", 30/11/53. (Ibid.)

(152) Bourne to Harris, n.d., circulated with "To Members of Council", 30/11/53. (Ibid.)

(153) Ibid.

(154) His contribution to the debate about whether the Nutrition Society should start organising more technical meetings during the war is another example of McCances's adherence to the same ideological tendency. See Chapter Four, footnote 173.

(155) See page 235.

(156) MacLeod, in her thesis on the Association of Scientific Workers records that "Communist activists or sympathisers in 1938 - 1939 included, for example.... L.J.Harris... (Information kindly provided by Mrs Fremlin to the author [MacLeod], Summer 1974.)" (MacLeod (1975), 390.) I asked several interviewees, some of whom had worked closely with Harris about his political affiliations and though most thought that he was on the left, none could confirm that he was as left-wing as MacLeod suggests. One piece of firm evidence of probable left-wing sympathies is a reference to Harris's involvement in an anti-war exhibition in November 1933, where he was billed as a speaker alongside J.D.Bernal and others. (Cambridge Review 55 (1933 - 4), 10/11/33 87.) There is also evidence that it was necessary for Harris to keep a low profile especially after Mellanby became Secretary of the MRC. (See Chapter Two, footnote 274 and Chapter Three, footnote 327.) It may be that due to Mellanby's surveillance of Harris during 1934, that in November 1934 when the Cambridge Review published a letter complaining about the BBC's censorship of a talk by J.B.S.Haldane on the "Causes of War", despite his previous involvement in the exhibition mentioned earlier, Harris's name did not appear among the 71 signatories. (Cambridge Review 55 (1933 - 4), 16/11/34, 104.) It may also be significant that at the second large public meeting of the Committee Against Malnutrition in May 1935, Harris did not speak, but Needham's speech appears to have consisted mostly of quotes from him. (The Lancet (1935) 1, 1076.) Finally, Harris was clearly an enthusiastic member of the Informal Conferences of Nutrition Workers which had so offended Mellanby. (See pages 194 - 6.)

(157) See page 103 and Chapter Two, footnote 300.

(158) See Marsh (1986), 102 - 3.

(159) Yudkin entered the army in 1943, and at the beginning of 1945 he was sent as a pathologist in the Military Hospital in Sierra Leone, British West Africa. He was technically appointed to the Chair of Physiology in October 1945, but was unable to take up the post until he had completed his military service. For an account of some of the Nutrition work which Yudkin did in Africa in his spare time, see Yudkin (1947).

(160) Unfortunately, the records of Yudkin's campaign in the College's and University's archives are such that only the barest outline of events can be given. It is not possible to find out from these sources any details of the problems which Yudkin faced. One point is clear however, and that is that Yudkin really continued a campaign which had already been started by the College. In February 1944, when the question of Mottram's successor was under consideration, the College asked the University to consider the possibility of replacing him with a Professor of Nutrition rather than a Professor of Physiology. Miss H. Reynard, Warden of the College, attempted to gain Lord Woolton's support for this idea. At that time the College was also trying to institute a BSc in Dietetics, and the Professoriate Committee of the University decided in March 1944, that the question of a Chair of Nutrition could not be settled until the question of the new degree had been settled. However, by February 1945 the University had not responded, and as a replacement for Mottram was badly needed for the dieticians course, Reynard wrote to the Principal for advice. She told him "What I am afraid of is that the expert nutritionists who would apply for a Chair in Nutrition will not apply for a Chair in Physiology which offers them nothing but teaching for a General Degree at Pass Standard." The Principal replied: "There is a strong body of opinion which regards Nutrition as a subject more appropriate for post graduate study in a Medical School. As a matter of fact, as you may know, the School of Hygiene are making a move in that direction." Reynard did not give up immediately, and replied that as the question of a BSc in Nutrition had now been raised at a University Advisory Board in Dietetics meeting and that the College had been asked to formulate a possible scheme, it would be a great help to have a Professor of Nutrition. However, the College was becoming desperate for teaching staff, and a few weeks later Reynard wrote to the Principal again, on behalf of the Council of the College, to request that a Professor of Physiology be appointed as soon as possible. (Warden to Sir John 14/2/44, Warden to Miss Trist, Academic Registrar Assistant 28/2/44, Warden to Woolton 4/2/44, Woolton to Reynard 8/2/44, Trist to Reynard 22/3/44, Warden to Claughton [Principal] 13/2/45, Claughton to Warden 22/2/45, Warden to Claughton 27/2/45, Warden to Claughton 15/3/45. QEC Appointment of Professor of Physiology Correspondence

1944/45. For background to the proposed BSc Dietetics, see Minutes of the College's Academic Board meetings 2/5/44, 6/6/44, 31/11/44, 21/11/44, 5/12/44, 13/3/45). See also Marsh (1986), 105 - 6.)

When Yudkin took up his duties in 1946 it was only a matter of months before he had formulated a scheme for a BSc in Nutrition. His scheme was first discussed at a College Academic Board meeting in March 1946. Yudkin emphasised that the aim of the scheme was to "train nutritionists, not dietitians, [his spelling] for posts in research or as advisers in Government Departments concerned with nutritional problems - Ministries of Agriculture, Education, Food and Health, and Colonial Office." Yudkin proposed a four year course which would cover "...a study of food in all its aspects - its production, preservation, preparation, distribution and consumption: the nutritional needs of the body and the effects of not meeting them: the economic and social factors concerned in these aspects." In view of Yudkin's proposals, the Dietetics Committee of the College decided that the previous plans for a degree in dietetics should not be pursued. However the University's Advisory Board on Dietetics revived the idea of a dietetics degree and Yudkin was asked to draw up a syllabus. This was discussed at a College Academic Board meetings in March 1947 when it was proposed that the course be modified "...to meet the special requirements for the training of nutritionists as distinct from Dietitians." The Council of the College decided that it would be unwise to send such a proposal forward to the University at that time. Yudkin attended meetings of the University Advisory Board on Dietetics, and the Board of the Faculty of Science, to explain the degree in dietetics, but in December 1948, the University Senate decided not to approve the BSc (Dietetics) Degree mainly because the curriculum was believed to be too broad. In February 1948 however, the Senate established a Special Advisory Board in Household and Social Science which would sit for three years and would advise upon the revision of the BSc (Household and Social Science) Course. It appears that it was this development which finally gave Yudkin the opportunity to develop the BSc (Nutrition) Course. Of the possible schemes put forward, one contained more chemistry and physiology. Yudkin favoured this option, and it was later named "Nutrition". In December 1948 the University Special Advisory Board in Household and Social Science approved the College's proposals, which were then sent to the Faculty of Science Board for approval. At the November 1951 College Academic Board Meeting it was reported that the University had finally approved of the BSc (Nutrition) Degree, and that the first students would start the course in October 1953. (Meetings of the College's Academic Board 12/3/46, 7/5/46, 22/10/46, 4/3/47, 10/3/47, 25/3/47, 3/6/47, 4/5/48, 1/6/48, 12/3/46, 1/1/49, 27/11/51 recorded in the QEC Academic Board Minute Book. See also University of London

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Senate Minutes 1951 - 52, 152. Senate Meeting 24/11/51 which reviews the proposals for the new degrees during 1950, and Marsh (1986), 231 - 2.)

(161) Yudkin published four papers with Needham, the first being Yudkin et al (1932).

(162) Yudkin's PhD (1935) was in bacterial chemistry. During the 1930s he published nine papers in the area. He was the sole author of six of these papers.

Stephenson, Marjory (1885 - 1948) Education includes: Newnham College, Cambridge. Career includes: Research in the Biochemistry Department, Cambridge University 1919 - 48. (WW)

(163) Yudkin, Harris and Abbasy (1936).

(164) Yudkin (1938).

(165) See Chapter Four, footnote 185.

(166) See Yudkin (1939a).

(167) See Yudkin (1941).

(168) See Wang and Yudkin (1939).

(169) See Yudkin and Kodicek (1942).

(170) See Yudkin and Ferguson, (1943), Yudkin Robertson and Yudkin (1943).

(171) See page 216.

(172) See pages 215 - 6.

(173) See Yudkin (1943a).

(174) Yudkin acquired his MD in 1943. (WW)

(175) See Yudkin (1952a).

(176) For Tuxford's index of nutrition see Tuxford (1939).

(177) See Yudkin (1944a), (1944b), (1948).

(178) See Yudkin (1943b), Yudkin and Jenkins (1943).

(179) See Yudkin (1944a).

(180) See Yudkin (1944b).

(181) This probably refers to the three day debate on the

Beveridge Report which took place in February 1943 during which the probable levels of Family Allowances were mentioned. See The Lancet 1943 I 282 - 4.

(182) Yudkin (1944b).

See also the Editorial entitled "Nutrition War, and Poverty" in The Lancet 1944 II 825 - 6, in which four of the seven references are to papers by Yudkin, and which concluded:

Money may not be the root of all evil, but its absence is the root of much. And unless we realize the extent of this evil in producing malnourished children and adults, we shall get little profit from the labours of those nutritionists who have been applying their science to everyday life.

It should be noted that despite the obvious political nature of the remarks in Yudkin (1944b), that there is no evidence of him being associated with the left in Cambridge during the 1930s. There is no mention of him in this connection in, for example, The Cambridge Review. None of my interviewees, some of whom had worked closely with Yudkin, spoke of him having any political affiliations. One informant emphasised that his relationship with Joseph Needham was purely scientific, and also suggested that his decision to undertake medical training in the 1930s, and to move away from Cambridge after the war were conditioned by a need to ensure his financial security. My informant explained that Yudkin's family was not well-off, that he was married with three sons, but that as he was Jewish he would find it difficult to obtain a Fellowship of a Cambridge college.

(183) Yudkin received no funding from the MRC in the immediate post-war years, until in 1959 £950 were awarded, "...for one year in the first instance for an investigation into the inter-relationship between dietary phytate, calcification, and intestinal phytase". (Queen Elizabeth College Annual Report 1959 - 60, 21.)

(184) The most political published remarks in the later 1940s were made in a speech "Food and Mankind" made at Kings College of Household and Social Science in November 1949. In this speech Yudkin reviewed the international food situation and argued against those who were agitating for an early end to rationing and price controls. (Yudkin (1950).)

(185) Yudkin (1949a).

(186) Yudkin (1948).

(187) Ibid.

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(188) For example "pallor" was found not to be correlated with low weight, "Tuxford Index" (see footnote 176) or low state of nutrition, clinically assessed. (Yudkin (1952a).)

(189) Yudkin (1952c), 364.

(190) Yudkin (1952b), 134.

(191) "Fighting Food Faddism was a lecture given to a meeting of the Food Education Society, chaired by Lord Horder. Yudkin emphasised that as

...there is so much which is unknown in nutritional science; and because there is still so much room for differing opinions based on what is known, that it is imperative, for all of us, that we approach the many nutritional problems which beset us with enquiring minds and with humility, not emotion and not with prejudice.

He went on to argue against the commonly accepted views that brown bread is nutritionally better than white bread; that raw vegetables are nutritionally better than cooked vegetables; and that brown sugar is better than white sugar. (Yudkin (1953b) 186 - 7.)

(192) Yudkin (1953c), 577.

(193) Yudkin (1953b), 186.

In a similar vein, in the May 1954 issue of Queen Elizabeth College Magazine Yudkin stated:

We can now see that the sciences out of which nutrition may be built include biology, genetics, chemistry, physics, physiology, bacteriology, sociology and economics. Yet it would be misleading to imagine that this is a sufficient description of the science of nutrition. It is only when appropriate parts of these other sciences are integrated and co-ordinated that there emerges nutrition, which one may truly describe as something greater than the sum of its parts. Our courses have been devised with the conviction that, though different parts of them will clearly be taught in different departments, that which finally results will be a training in nutrition. (Yudkin (1954), 27.)

Similarly, in an article on the Nutrition Department in 1960, he commented on the new buildings which were being erected. These were, he claimed, the first laboratories in Britain which had been built specifically for research in nutrition. He then continued: "This may be taken as a sign that nutrition is not simply one aspect of physiology, or of biochemistry or of agriculture, or of medicine, but a science in its own right." (Yudkin (1960), 153.)

(194) Yudkin (1953a).

(195) The Conference included papers on "The Education of Schoolchildren in Nutrition", "The Education of Housecraft Teachers in Nutrition", "The Education of Medical Students in Nutrition", "Education in Animal Nutrition", "Nutrition Education in the Army", "The Place of Nutrition in the Institutional Management Association Certificate Course", "Nutrition Teaching in the Courses Sponsored by the Hotel and Catering Institute", "The Royal Sanitary Institute Certificate in Nutrition", "Nutrition in Hospital Catering" and "The New Degree in Nutrition". Proceedings of the Nutrition Society 12 (1953), 166 - 199, and Copping (1953).

(196) See Yudkin (1953a).

(197) See Yudkin (1953b).

(198) Essential Fatty acids are like vitamins in that they are organic compounds which are required, but cannot be synthesized by the body. (See McCollum (1957) 373 - 5.)

(199) "Hardened fat" is fat which has been chemically treated to convert the unsaturated into saturated fatty acids, thereby raising the melting point.

(200) See Nyrop (1954).

(201) See Yudkin (1955a).

(202) See Yudkin (1955b).

(203) See Sinclair (1956).

(204) See page 230.

(205) See Yudkin (1956b).

(206) Yudkin's theory was eventually given a great deal of publicity by his widely read book Pure, White and Deadly, which was published shortly after he retired. (Yudkin (1972).) For some of Yudkin's experimental work, see Yudkin et al (1967), (1970), (1971), (1972). See also Yudkin (1971), (1974).

(207) Yudkin (1958).

(208) Ibid., 149 - 50.

(209) Yudkin (1959).

(210) See Yudkin (1972), especially 21 - 8.

(211) For debate in The Lancet during 1958 - 9, which followed a Leading Article referring to Yudkin (1958) and

another book on slimming (MacKarness (1958)), see The Lancet (1958) II 785, 849 - 50, 908 - 9, 1013, 1065 - 6, 1126, 1371, (1959) I 252 - 4, 365, 474, 632. Sinclair's first contribution to this debate (Sinclair (1958)) mockingly attacked Yudkin. For later debate about the saturated fats hypothesis started by Sinclair in the British Medical Journal under the heading "White Mouse Medicine" see BMJ (1960) II 1520 - 1, 1596, 1737, 1882, 1674, (1961) I 55 -6. Sinclair's original contribution to this debate (Sinclair (1960)) was occasioned by an article in the October 1960 issue of Family Doctor by Sir Heneage Ogilvie (Ogilvie (1960)) which attacked a previous article which advocated Sinclair's theory. (Bradshaw, (1960).) Part of this debate was reported in the popular press and in November 1960 Sinclair also explained his views on a BBC TV "Panorama" programme.

(212) For some details of the Freedom from Hunger Campaign see Lowenberg et al., (1974) 358 - 60.

(213) Yudkin's inaugural lecture for example was partly concerned with "social factors" of nutrition. (Yudkin (1956a).)

(214) Those involved with advising Yudkin and lecturing to the students included: David Glass, (1911-78) demographer and Professor of Sociology at the London School of Economics; Richard Titmus, (1907-73) Professor of Social Administration at the London School of Economics (see Clark and Titmuss (1939)); and Audrey Richards, anthropologist, (see Richards (1932), (1939) and (1936).)

(215) McKenzie, John Crawford (1937 -). Education and career includes: London School of Economics and Political Science, BSc Economics; Research Sociologist and Lecturer, Queen Elizabeth College, 1959 - 66; Deputy Director, Office of Health Economics, 1966 - 8; Market Information Manager, Allied Breweries 1968; Chief Executive, Kimpher Marketing Services, 1973; Principal, Ilkely College, 1979; Rector Liverpool Polytechnic, 1984; Visiting Professor, Queen Elizabeth College, 1976 - 80. (WW) For examples of McKenzie's work see McKenzie (1965a, b and c).

(216) The Leverhulme Trust was established in 1925. See Charities Aid Foundation (1985).

(217) Watson, Ralph Harry Johnston. Qualifications and career include: BSc 1950, PhD 1954, London; Member of the scientific staff of the MRC; Research Assistant, Institute of Psychiatry, London; Research Psychologist, Queen Elizabeth College. (Dir BS 66 - 7) For examples of Watson's work see Watson (1964), (1966).

(218) Van Den Bergh, James Philip (1905 -) Director of

Unilever Ltd 1937 -65. Member of the Executive Council of the Food Manufacturers Federation 1957 (President 1958 - 61) Member of the Food Research Advisory Committee 1960 - 65, (Chairman 1963). Member of Council, Queen Elizabeth College, London University 1961 - 73, Honorary Fellow, 1968. (WW)

(219) Yudkin and MacKenzie (1964a), 10.

(220) Ibid.

(221) See Yudkin (1964a).

(222) See McKenzie (1964).

(223) Golby (1964), Sofer, Janis and Wishlade (1964), and Graham (1964).

(224) See Bender (1964). Biographical details: Bender, Arnold Eric (1918 -). Education includes: Liverpool University, BSc; Sheffield University, PhD. Career includes: Research in the Pharmaceutical Industry 1940 - 45, 50 - 54; Research Fellow, National Institute of Radiotherapy, Sheffield, 1945 - 47; Lecturer, Sheffield University, 1947 - 64; Research, Food Industry, 1954 - 64; Teaching and Research, University of London 1965 - 83; Professor of Nutrition 1971 - 78; Professor of Nutrition and Dietetics and Head of Food Science and Nutrition department, Queen Elizabeth College, 1978 -83. (WW)

(225) See Yudkin and McKenzie (1964b).

(226) See Yudkin (1964c).

(227) Yudkin's emphasis on the necessity of studying the determinants of eating habits is very similar to, for example, Carnwath's characterisation of Cathcart's approach in 1932, and Cathcart's proposals for study of the "intimate food habits of the people in 1934. (Pages 127 and 165.)

(228) See Chapter Four, footnote 227.

(229) Bender (1972). (KCL)

(230) Ibid., 2.

(231) Ibid., 9.

(232) Yudkin's immediate successor and Head of the Nutrition Department from 1971 to 1978 was A.S.Truswell. During the months preceeding, and the years following Yudkin's retiral, there was a bitter exchange between Yudkin and Truswell, and between Yudkin and the College,

regarding Yudkin's ambitions to continue research in the college after his retirement. (See Marsh (1986) 271 - 4.) In Truswell's inaugural lecture he was careful to distance himself from Yudkin's enthusiasm for sugar consumption as a cause of degenerative diseases and emphasised that nutritionists should attempt to reach consensus before publicising their views about the nutritional origins of diseases. But the structure of the lecture, in which he discussed nutritional problems among hunter-gatherers, primitive agriculturalists and pastoralists, urban slum and periurban shanty town dwellers and in affluent societies, showed that social factors played a major role in his thinking. He also remarked: "Our Social Nutrition section has shown that eating habits are very resistant to change.... Our... interest in changing food habits continues." and referred to a project of the Department which was underway in Ethiopia. (See Truswell (1972) (KCL).)

Truswell, Arthur Stewart, (1928 -). Education and career include: Liverpool and Cape Town Universities, MB ChB 1952, MD 1959; Research Bursar, Clinical Nutrition Unit, Department of Medicine, Cape Town University, 1958 - 9; Full time Lecturer, Senior Lecturer in Medicine, and Consultant General Physician, Cape Town University and Groote Shuur Hospital, 1965 - 71. Professor of Nutrition and Dietetics, Queen Elizabeth College, 1971 - 8; Professor of Human Nutrition, University of Sidney, 1978. (WW)

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- (01) Barnes (1977), ch 2.
- (02) Ibid., 33.
- (03) Ibid., 38.
- (04) Ibid., 35.
- (05) See this thesis pages 21 - 4.
- (06) Barnes (1977), 61.
- (07) Ibid.
- (08) Ibid., 62.
- (09) Ibid.
- (10) Ibid., 63.
- (11) For MacKenzie's discussion of these theoretical and methodological questions, which follows similar lines to that of Barnes see MacKenzie (1981) 186 - 90.
- (12) See Sections 2.7 and 132 - 4.
- (13) See page 216.
- (14) This refers to the "chemical physiological" approach to nutrition which Cathcart had advocated and Cuthbertson had continued to use in Glasgow during the 1930s. See page 88 and footnote 313.
- (15) Examples of such work are Hopkins's early work on vitamins and Mellanby's work on rickets with dogs. See pages 98 - 9, and 64.
- (16) For Mellanby's advocacy of this kind of work see Chapter Two, footnote 82.
- (17) This refers to work of the type which Cathcart conducted during the later part of his scientific career. See page 92.
- (18) This refers to the kind of work conducted by Orr and his colleagues for Food, Health and Income. See pages 180 - 1.
- (19) This was the view that Cathcart had been the major proponent of for many years. See pages 96 - 7.
- (20) This was the view that Mellanby put forward in 1927 at the BMA Annual Conference. See pages 103 - 4.

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(21) This was the thrust of the Campaigns of the Committee Against Malnutrition and the Children's Minimum Council, and scientists such as Orr. See pages 169 - 70.

(22) There were several occasions during the war when attempts were made to move away from practical matters, and a general move in this direction after the war. See pages 207, 211 - 3, 239 - 40.

(23) Garry was enthusiastic about getting the "appliers" of nutritional knowledge into the Nutrition Society, but he opposed the idea of the Society preparing a report on the question of agene. See pages 242 - 3 and 251.

(24) Werskey (1978), 262.

(25) See pages 230 - 31, and 249 - 58.

(26) See page 232.

(27) See page 260.

(28) See page 217.

(29) See page 262.

(30) I do not have direct evidence on this point, but one informant, who was fairly close to Yudkin suggested to me that he thought that Yudkin's lack of support from the MRC was a result of Mellanby's preference for supporting Platt who he described as "Mellanby's blue-eyed boy". One piece of evidence that the Nutrition Departments at the London School of Hygiene and Tropical Medicine and at QEC were rivals, is provided by the response of the Principal of London University to the suggestion that Mottram be replaced by a Professor of nutrition. (See Chapter Five, footnote 160.) My informant, mentioned above, went on to describe how he, and another eminent medically qualified nutrition scientist had been called upon by London University to meet with Yudkin and Platt and to discuss their respective courses, after certain international bodies that awarded grants to third world students had experienced some confusion because of the existence of two nutrition courses within London University. This probably refers to events following the introduction of the Academic Postgraduate Diploma in Nutrition at Queen Elizabeth College in 1962, and/or the MSc Nutrition in 1967, which competed fairly directly with the postgraduate courses on offer at the London School of Hygiene and Tropical Medicine. In 1960, in an article in Nutrition, Dietetics and Catering about the Nutrition Department, Yudkin described the progress of the Degree without mentioning overseas students, suggesting that, until this time at least, they had not formed a significant proportion of the

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students. (Yudkin (1960).) The question of rivalry between Queen Elizabeth College and the London School of Hygiene and Tropical Medicine is clearly a question worthy of further research.

(31) See Chapter Five footnote 18.

(32) See Chapter Five footnote 211.

(33) See Chapter Five footnote 212.

(34) The introduction of a new Nutrition Degree was certainly in line with the aim of King's College of Household and Social Science of acquiring greater respectability within the University, (see Marsh, (1986)) but an attempt to introduce nutrition as pure rather than an applied science would have been entirely against the traditions of the College. At that time a BSc in Dietetics was under discussion and Yudkin proposed "Nutrition" as a more academic alternative, but the "nutritionists" he hoped to train were clearly to be concerned with practical matters. See Chapter Five, footnote 160.

(35) See Chapter Four, footnote 332.

(36) See British Medical Association (1950), paragraphs 7, 9, 11, 23, 154.

(37) See the quotation from The British Encyclopedia of Medical Practice 1952 on page 264.

(38) See Chapter Five, footnote 191.

(39) This was the emphasis in both "Fighting Food Faddism" and in the summing-up address at the Nutrition Society meeting on education, both of which were given in 1953. (See pages 265 - 6.)

In 1950 the BMA Report also proposed that a "permanent organization might with advantage be established for the purpose of keeping a continuous check on the nutritional state of the population and investigating the many unsolved nutritional problems." (British Medical Association (1950) paragraph 19.) Yudkin repeated this suggestion, and called attention to the fact that it was a re-iteration of the 1942 article in The Times in his 1952 article on Nutrition in The British Encyclopedia of Medical Practice (Yudkin (1952b)). However this suggestion was not pursued during the following years.

(40) I am referring here to Cathcart's emphasis on such activities as cookery demonstrations in homes and halls. (See page 98, and Chapter Three, footnote 382.)

(41) See page 136.

(42) See Chapter Four, Footnote 227. In a similar vein, in an article in on "The Problem of Food Advice in Post-War Reconstruction", in the CNC's Nutrition Bulletin it was stated that to be effective "Food Advice" needed to "...work patiently on a long-term programme", and then continued:

In a matter of this kind the unconventional forms of teaching are frequently the best. The advice should creep gently and persistently into the awareness of the housewives, as though it were part of a social medium of thought and opinion. There has been during the war some exercise of ingenuity in this direction, especially in the Women's Institutes, in the Civil Defence Services and in the Housewives sponsored by the W.V.S....

(Nutrition Bulletin 32, October and November 1944.)

(43) The "Food Leaders" Scheme had started in Birmingham in 1942. They were mostly members of local voluntary organisations and were grouped under a honorary organiser for the borough or county. Their role was to "...act as a local ferment, conveying information to neighbours, promoting the Welfare Foods schemes, arranging for window displays, lectures, brain's trusts and other methods of propaganda..." The Food Leaders received a short course of training and were awarded a given a special badge. See Nutrition Bulletin 32, October and November 1944. See Clark (1949) on the dismantling of the system of food advice.

(44) See pages 266 - 9.

(45) A passage in the "Conspectus" in Changing Food Habits reinforces the idea that the value of the new emphasis on "sociological and psychological factors" was partly that it gave Yudkin and McKenzie a novel approach in comparison with the Freedom From Hunger Campaign. They remarked:

There is still a widespread opinion that people will change their food habits once they have been taught the advantages, in terms for example, of nutritive value. Thus the United Nations agencies, understandably concerned to use any method which might promote desirable change in food habits, have undertaken extensive programmes of nutrition education. The Food and Agricultural Organisation has said:

...People tend to eat what they like... People also eat what they believe to be good for them... Middle class families of Western Europe and America have been brought up to respect science and value its results. Once the facts have been presented to them, these families tend to accept a new food or a new concept about food and its relationship to

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health. Thus... education, and particularly science education, will aid the application of new scientific knowledge to the improvement of diet.

There is now in fact a large body of evidence against this naive view, and for the more realistic view that persuasion requires a series of consecutive steps. First, people need to know that a new pattern of eating is better than an old pattern; second, they need to have the wish for change; third, they need to make the change. Persuasion that is, consists of imparting information, of changing habits, and finally of altering behaviour.

(Yudkin and McKenzie (1964), 140; the quotation is from the Freedom from Hunger Campaign booklet: Food and Agricultural Organization (1962), 22.)

(46) See, in particular the quotation from the New Scientist article on page 273.

(47) According to the formulation in Changing Food Habits, it was to be the nutritionist's role to decide what new foods were needed and how the people could be persuaded to eat them; it was to be the food manufacturer's role to provide the necessary foods.

(48) See Barnes (1977), 57.

(49) For a few interviewees, all their responses were structured in such a way as to indicate that they subscribed to Yudkin's approach to nutrition. One such interviewee, who had worked in the London area, although not at Queen Elizabeth College, responded to the question, "Do you consider nutrition to be a science?" as follows:

...it has to be a behavioural science - it's no good knowing all about nutrition unless you actually do something about it... nutrition is based on physiology and chemistry and biochemistry - and all the clinical aspects of it as well - but it also has to be involved in motivating people to do the right thing...

When I asked my interviewee what she thought of as the major advances in nutrition science during the last forty years of so, she spoke about a new awareness of the need to think about nutrition in the terms of this definition, and spoke of MacKenzie as follows:

...he's one of the few people who have in fact worked in this field... he's very much a pioneer - he started the social nutrition group at QEC... he was about the first what you might call social nutritionist in Britain... and I think you'll have to give him the credit for a lot of original thought...

(50) Many of my interviewees at the Rowett Research Institute for example, mentioned Orr when I questioned them about the sociological and psychological aspects of nutrition.

(51) In one interviewee, for example my question about the importance of studying sociological and psychological aspects of nutrition produced the following exchange:

Interviewee: Are you talking about vegans and that sort of thing - in other words people who won't eat meat?"

DS: I'm talking about the study of eating habits and why people eat what they eat.

Interviewee: Well... that's a question of which I should like a good deal of notice... because you see the vegan really ought to take vitamin B₁₂ ought n't they?

(52) For the Report, and Yudkin's reaction to it in the letters columns of Nature, see Agricultural Research Council/Medical Research Council (1974) and Yudkin (1975). The Report had defined "nutrition" as follows: "The science of human nutrition is mainly concerned with defining the optimum amounts of the constituents of food necessary to achieve or maintain health." Yudkin rejected this definition and asserted:

Nutrition, on the contrary, is to do with the whole relationship between man and what he eats, that is it is to do with food: how food is produced; what determines the foods we eat and how much; what the constituents of food are; which of these the body requires and in what amounts; how these constituents are dealt with in the body and what functions they perform; what happens when the required amounts of the required constituents are not provided or are exceeded; what steps can be taken to avoid these differences between what is needed and what is consumed. Nutrition, therefore, has reference to economics, anthropology, sociology, demography and psychology, as well as to chemistry, biology, biochemistry and physiology...

Yudkin complained that the Report was concerned almost exclusively with biochemistry and continued:

This bias is really not good enough; the human body exists together with other human bodies in a social and cultural environment, and as important as biochemistry is, it is as important - and possibly more so - to know what determines the diets of different people, in different groups, at different times. Certainly we need to know more about energy transformation in the body and the mechanisms that control body weight and body

composition. But of more immediate relevance to problems of malnutrition is the search for answers to quite different questions: Why do some people find it easy to cure their obesity and others find it difficult? Why are so many of the obese so easily persuaded that they can solve their problem by eating Ryvita or yoghurt, or by swallowing slimming pills that contain nothing but aperients, or by going to expensive but quite ineffective slimming clinics?

In this country, and in other countries of the western world, there is a considerable and increasing demand for the so-called health-foods. What is it that makes so many people entirely ignore the knowledge so laboriously acquired by nutritional research in favour of the incorrect or misleading information that makes them buy brown sugar, brown bread, sea salt, honey and vitamin pills to ensure that they are adequately nourished, or that makes them believe that there is special virtue in brown eggs or in vegetables grown with compost rather than with chemical fertilisers? And why do we continue to act as if it is still true that adequate nutrition in the industrialised countries is still largely a matter of economic circumstance...?

It is because nutritionists know that such matters are important that research carried out in departments of nutrition today is concerned not only with the physiological and biochemical problems that the report concentrates on so heavily, but with broader subjects too: the factors that determine food choice, the influence of diet on behaviour and behaviour on diet, the assessment of attitudes towards food and nutrition, and the differences between what people think about food and what in fact they eat.

Yudkin's letter followed an article on the Report in Nature by John Rivers, which had expressed similar views. (Rivers (1975).) Rivers is a graduate of Queen Elizabeth College, and former President of the Students' Union, (see Marsh (1986), 265, 310) and he later became a member of the staff of the Nutrition Department at the London School of Hygiene and Tropical Medicine. His article, like Yudkin's letter, complained about the Report's emphasis on physiology and biochemistry and continued:

Myopic... is the only way to describe the neglect shown by the... committee of the whole subject of social nutrition. Precious little value is placed on studies of what people eat - and virtually none on the important field of why they eat it, and why they do not. How do we persuade a person to eat what we regard as good,

and avoid what we regard as harmful? No amount of heavyweight basic science in nutrition can avoid the fact that food that is not eaten has no nutritional value...

The omission of any discussion on social nutrition is a curiously blinkered attitude. If it was an error it will no doubt be as unfortunate as it is inexplicable. What young research worker of "potential" will be attracted now into social nutrition? (Rivers (1975), 81.)

In 1978, at a Nutrition Society meeting, Rivers shocked the more elderly members of the Society, (I am aware of this from my interviews) with a paper entitled "The profession of nutrition - an historical analysis". He argued that various improvements in nutritional status of the population of Britain during the Twentieth Century, have arisen from socio-economic improvements rather than from the application of advances in the biochemistry and physiology of nutrition. He also pointed to various ill-effects of the application of new nutritional knowledge. This argument was the beginning of the process of reassessment of the value of the nutritional knowledge produced during the first half of the twentieth century which has been continued by Petty (see page 33), who now works closely with Rivers. At the 1978 Nutrition Society meeting, Rivers associated the false belief that improvements in nutritional status had followed advances in the physiology and biochemistry of nutrition, with what he regarded as a contemporary professionalising tendency which he held responsible for the emphasis on physiology and biochemistry in the ARC/MRC Report. He concluded with a reassertion of the need for study of the "social component" of nutrition:

I do not wish to prevent the growth of studies of nutrition at the molecular level, merely to prevent the growth of the idea that this will ultimately solve all nutritional problems. [He referred at this point, to the ARC/MRC Report.] ...the problems of nutrition, if not the science, do span the range from combine harvester to ribosome and can only be tackled if the social component of nutrition is studied... (Rivers (1979), 230.)

(53) I recall the following examples of this from my experience of the MSc (Nutrition) Course at Queen Elizabeth College in 1976 - 7:

Mr D.S. Miller, Research Nutritionist, during his lectures on obesity, sought to justify his research on thermogenic (heat-producing) drugs for slimming, on the grounds that "sociological and psychological factors" make it almost impossible for fat people to change their detrimental eating habits. The use of thermogenic drugs would allow them to slim without changing their diets. (For

some published results of this work see Massoudi and Miller (1977) and Evans and Miller (1977).)

Similarly, during lectures, Professor Truswell suggested that the value of his work which sought to identify the component in dietary fibre which has a lowering effect on blood lipids, was that once identified, it could be purified and added "invisibly" to refined foods. The study of "sociological and psychological factors" had shown that the alternative - a general shift towards a less refined diet - was impractical. (For some published results of a part of this work which was supported by a grant from the Association of European Pectin Manufacturers, see Judd and Truswell (1982).)

Perhaps the greatest embarrassment to the "professional nutritionist" in 1976 - 7, was the continuing occurrence of rickets in Britain among the Asian community. In various lectures, the failure of the authorities to take action to eliminate the problem, as well as the Department's own research on this subject, was justified by the allusion to the importance of "sociological and psychological factors". (See, for an example of the work done in the Department, Hunt et al (1976), and for the general background Department of Health and Social Security (1980), and Buck (1977).) Sandra Hunt graduated from the BSc Nutrition Course at Queen Elizabeth College in 1972, after which she studied the food habits of Ugandan Asian immigrants for a PhD. The conclusion of her 1975 Van den Berghs & Jurgens Ltd award winning essay, is a clear echo of Yudkin and MacKenzie in Changing Food Habits, and typifies the attitude of the department at that time:

To improve the Asians' diet it is necessary to understand the cultural background and dietary practices of the different groups. Only with this knowledge can any answer be found to the nutritional deficiencies among our Asian immigrants today. (Hunt (1976), 48.)

The possibility of members of the Department seeking to alleviate the problem of rickets in the Asian community by organising or associating themselves with groups for political-agitational or educational activities of the kind which Orr and others had been enthusiastically involved with during the 1930s was not on the agenda for the nutritionists of Queen Elizabeth College during the 1960s and 70s. This was not because such activities had ceased to exist, as is shown by the record of Yudkin's own brother, Simon Yudkin, Consultant Paediatrician at University College Hospital. Simon Yudkin died in 1968 aged 54. His British Medical Journal obituary records that he was "...an idealistic socialist who believed in taking practical steps to improve society." He was founder and Chairman of the Council for Child Welfare and "...the main inspiration for the many successful campaigns it has carried out for the benefit of children." (See British Medical Journal (1968). Also The Lancet (1968), The Times (1968), and National

Council for Children's Welfare (1968).) John Yudkin and his successors at Queen Elizabeth College did not engage in such activities because there was no model to emulate, but by choice. Presumably they perceived it to be more in their interests to present problems such as that of rickets in the Asian community as scientific problems in need of further study (whether biochemical, medical, or sociological) rather than as social and political problems requiring social and political solutions. That such action might have helped was acknowledged by a leading paediatrician who has worked on the problem, who I interviewed in 1979, almost twenty years after the first cases of rickets in Asian immigrants had been discovered. He told me that he thought, in retrospect, that "...we made the mistake of being too decent about it and not raising enough publicity about it at the beginning."

At the Nutrition Society meeting in 1978, when Rivers argued against emphasis on biochemistry and physiology, which he associated with the "professionalisation" of nutrition (see last footnote), he was aligning himself with an alternative model of professional practice, which had been formulated by Yudkin at Queen Elizabeth College in the early 1960s. Rivers concluded his 1978 speech with a plea to "nutritionists" to avoid "professionalizing" and to make themselves socially useful. However, emphasis on the need to study "social factors" is a professional strategy which is every bit as concerned with redefining what may be social and political problems as scientific problems, as the strategy of emphasizing the biochemistry and physiology of nutrition which Rivers attacked. As we can see from the examples at the beginning of this footnote, emphasis on sociological and psychological factors can also quite easily be used to justify biochemical research.

I would suggest that the discussion in the text and in the last two footnotes has important consequences for the historian of nutrition who wishes to do work which can potentially provide insights of value for the alleviation of contemporary nutritional problems. In my opinion, the historian should not seek to judge the scientific work of the nutrition scientists of the early decades of the century in the light of current nutritional knowledge, (the task which Celia Petty is undertaking), for such work is likely to produce history which is aligned with the interests of some group within the contemporary scientific field. I would suggest rather that the study and assessment of the achievements and failings of past nutrition scientists can take place without reference to the validity of their scientific knowledge, by treating knowledge as a resource which is produced and used in the furtherance of particular interests. I would propose that this kind of history is more likely to inspire the kind of fresh thinking and activity by today's "nutritionists", which might play a role in alleviating nutritional problems in this and other countries.

(54) The Head of the Nutrition Department at Queen Elizabeth College (which, in 1985 was absorbed by King's College London) is now Donald J. Naismith who succeeded Arnold Bender in 1984. Biographical details: born 1929; BSc (Biochemistry), University of Glasgow, 1953; Post-graduate work on "inter-relationships between energy and protein metabolism" under Professor H.N. Munro at Glasgow, PhD 1955; Scientific staff, MRC Human Nutrition Research Unit, under B.S. Platt, 1957 - 67; Lecturer, Senior Lecturer and Reader in Nutrition, Queen Elizabeth College, 1967 - 84. (See Naismith (1974), 46, and Marsh (1986), 306, and for his main research interest, Naismith (1980).)

For a reference to Naismith's twelve month study of potato crisps funded by the Snack, Nut and Crisp Manufacturers Association see The Scotsman 11/3/86, 3. Naismith was reported to have pointed out that potato crisps "contain more fibre than wholemeal bread, six times as much vitamin C as an apple and less salt than cornflakes." However, comments by Dr John Dawson, under-secretary of the BMA were also reported. Dawson drew attention to the high proportion of vegetable oil in crisps, and suggested: "people would be better off eating a jacket potato, preferably with the skin on."

BIBLIOGRAPHY

- Accessory Food Factors Committee (1923) "Studies of Rickets in Vienna" Med Res Counc Spec Rep Ser 77 HMSO, London.
- Addison, Paul (1977) The Road to 1945 Quartet Books, London.
- Agricultural Research Council/Medical Research Council (1974) Food and Nutrition Research (Report of the "Neuberger Committee") HMSO, London.
- Allen R.G.D. (1971) "Bowley, Sir Arthur Lyon, (1869-1957)" in Dictionary of National Biography Williams, E.T., and Palmer, H..M. (eds), Oxford University Press, London.
- American Dietetic Association (1967) Essays on the History of Nutrition and Dietetics; reprinted on the occasion of the 50th anniversary of the founding in 1917 of the American Dietetic Association Compiled by Adelia M.Beeukes and others. Chicago.
- American Dietetic Association (1968) Lydia J.Roberts award essays; a compilation of essays Chicago.
- Andross, M. (1949) "Effect of Cooking Meat" British Journal of Nutrition 3, 396 - 403.
- Astbury, B.E. (1956) "Twenty-Five Years in the Family Welfare Association." Social Work Jan 1956, 138 - 44.
- Astor, Viscount (1937) Speech on nutrition given in the House of Lords 5/5/37, revised. National Temperance League, London.
- Aykroyd, W.R. (1933) "Diet in Relation to Small Incomes" Quarterly Bulletin of the Health Organisation of the League of Nations II, 130 - 53.
- Bacharach, A.L. (1942). Letter on the proposed "Nutrition Council", The Times 18/9/42.
- Bacharach, A.L. (1946) Contribution to the discussion during the meeting on the training of dieticians, Nov 1945. Proceedings of the Nutrition Society 4 (3 & 4) 274.
- Baker, J.R. (1970) "Michael Polanyi's Contribution to the Cause of Freedom in Science" Minerva XVI (3), 382 - 96.
- Baldwin, E. (1972) "Hopkins, Frederick Gowland" Dictionary of Scientific Biography VI Charles Scribner's Sons, New York.
- Barcroft, J. (1937) "Starling, Ernest Henry" in Dictionary of National Biography 1922 - 30. J.R.H.Weaver (Ed) Oxford

University Press, London.

Barcroft, J. (1944) Chairman's summing up address at Nutrition Society meeting on "Problems of Collective Feeding", 30/5/42. Proceedings of the Nutrition Society (1944) 1 (1), 112.

Barnes, Barry (1974) Scientific Knowledge and Sociological Theory Routledge & Kegan Paul, London.

Barnes, Barry (1977) Interests and the Growth of Knowledge Routledge & Kegan Paul, London.

Barnes, Barry and MacKenzie, Donald. "On the Role of Interests in Scientific Change" in Wallis (ed), 49 - 66.

Barnes, Barry and Shapin, Steve eds. (1979) Natural Order: Historical Studies of Scientific Culture Sage Publications Beverly Hills and London.

Barr, Sir James (1920) Contribution to "Discussion on the Present Position of Vitamins in Clinical Medicine" British Medical Journal 1920 II, 150 - 1.

Bassett, R. (1958) Nineteen Thirty-One: Political Crisis MacMillan and Co Ltd, London.

Bayliss, R. (1975) "Home Economics and the Special Reports" Journal of Educational Administration and History VII (1), 18 - 27.

Bayliss, R. (ed) (1979) Aberdeen School of Domestic Science An Outline History Robert Gordon's Institute of Technology, Aberdeen.

Bender, A. (1964) "The Nutritionist in Industry" in Yudkin and McKenzie (1964) 102 - 24.

Bender, A. (1972) The Wider Knowledge of Nutrition Inaugural lecture given on 24/10/72. Queen Elizabeth College, London.

Benedict, F.G., Miles, W.R., Roth, P., Smith, H.M. (1919) Human Vitality and Efficiency Under Prolonged Restricted Diet Carnegie Institute, Washington, USA.

Beveridge, W.H. (1928) British Food Control Social and Economic History of the World War Carnegie Endowment for International Peace.

Blaxter, K.L. (1979) "Nutrition research priorities for the United Kingdom" Proceedings of the Nutrition Society 78 213 - 7.

Blaxter, K.L. (1972) "John Boyd Orr: Animal Experimentation and the Human Situation." Rep Rowett Inst 28, 108 - 15.

Bloor, David (1976) Knowledge and Social Imagery Routledge & Kegan Paul, London.

Bloor, David (1983) Wittgenstein. A Social Theory of Knowledge MacMillan Press Ltd., London.

Board of Education (1908) Circular 582 to Local Education Authorities. Schedule of Medical Inspection. HMSO, London.

Board of Education (1910) Annual report of the Chief Medical Officer of the Board of Education for 1908 (Cd 4986) HMSO, London.

Board of Education (1911) Annual report of the Chief Medical Officer of the Board of Education for 1910 (Cd 5925) HMSO, London.

Board of Education (1915) Annual report of the Chief Medical Officer of the Board of Education for 1914 HMSO, London.

Board of Education (1934) Statistical Returns Relating to Nutrition Administrative Memorandum 124. HMSO, London.

Board of Education (1936) The Health of the School Child. Annual report of the Chief Medical Officer of the Board of Education for 1935 HMSO, London.

Bourdillon, R.B., Bruce, H.M., Fischmann, C., Webster, T.A. (1931) "The Quantitative Estimation of Vitamin D by Radiography" Med Res Council Spec Rep Ser 158 HMSO, London.

Bracewell, Mary F., Hoyle, E., and Zilva, S.S. (1930) "The Antiscorvy Vitamins in Apples" Med Res Council Spec Rep Ser 146 HMSO, London.

Bradshaw, J. (1960) "Out of the Frying Pan" Family Doctor May 1960, 286 - 8.

British Medical Association (1933) Nutrition Committee Report Supplement to the British Medical Journal, 25/11/33, London.

British Medical Association (1935) Family Cookery and Catering British Medical Association, London.

British Medical Association Report of the Committee on Nutrition (1950) British Medical Association, London.

British Medical Association Science Committee (1906) Report of Meeting 18/6/06 British Medical Journal Supplement 14/7/06, 33.

British Medical Association Science Committee (1907) Report of Research in Progress "Leonard Findlay" British Medical

Journal Supplement 22/6/07, 412.

British Medical Association Science Committee (1908) Report of Research in Progress "Leonard Findlay" British Medical Journal Supplement 20/6/08, 443.

British Medical Association Science Committee (1909) Report of Research in Progress, "Rickets" British Medical Journal Supplement 17/4/09, 172.

British Medical Journal (1899) "William Rutherford MD FRS" (obituary) British Medical Journal 1899 I, 564 - 7.

British Medical Journal (1912) "Sir James Barr on the Insurance Act" British Medical Journal 1912 I, 44.

British Medical Journal (1913) "Diet of the Labouring Classes". (Abstract of Lindsay (1913).) British Medical Journal 1913 I, 647.

British Medical Journal (1919a) "The Food Requirements of Man" (Editorial/Review of Royal Society Food (War) Committee (1919)) British Medical Journal 1919 I, 349 - 50.

British Medical Journal (1919b) "The Nation's Debt to Physiologists" (Editorial) British Medical Journal 1919 I, 775 - 8.

British Medical Journal (1922) "Benjamin Moore" (obituary) British Medical Journal I, 417, 459.

British Medical Journal. (1934a) "Food Standards of the Working Class. A Committee Against Malnutrition" British Medical Journal 1934 I, 1170.

British Medical Journal (1934b) "Undernourishment and Unemployment" British Medical Journal 1934 II, 561 - 2.

British Medical Journal (1935a) "Committee Against Malnutrition Meeting at Conway Hall" British Medical Journal 1935 I, 1076.

British Medical Journal (1935b) "The Nutrition of Mothers. An Investigation by the People's League of Health" British Medical Journal 1935 II, 79.

British Medical Journal (1935c) Comment on the Milk Marketing board Scheme to provided educational authorities with cheap milk. British Medical Journal 1935 II, 1261.

British Medical Journal (1936a) "Nutrition of Expectant and Nursing Mothers" British Medical Journal 1936 II, 256.

British Medical Journal (1936b) "Medical Notes in Parliament" British Medical Journal 1936 I, 398.

British Medical Journal (1936c) "Medical Notes in Parliament" British Medical Journal 1936 I, 614.

British Medical Journal (1936d) "Medical Notes in Parliament" British Medical Journal 1936 I, 672 - 3.

British Medical Journal (1937) Note on the activity of the Conservative Committee on Nutrition British Medical Journal 1937 I, 736.

British Medical Journal (1938a) "Sir James Barr obituary" British Medical Journal 1938 II, 1117 - 8.

British Medical Journal (1938b) "Newcastle Conference on Child Nutrition" British Medical Journal 1938 I, 1228.

British Medical Journal (1939a) "Dr G.C.M. M'Gonigle" (obituary) British Medical Journal 1939 II, 371.

British Medical Journal (1939b) "Comment on 'Medical Testament on Nutrition and its Relationship to Agriculture' drawn up by the Medical and Panel Committee Representing 600 doctors of the County Palatine of Chester'" British Medical Journal 1939 I, 783.

British Medical Journal (1939c) "Food to Fit the Nation" British Medical Journal 1939 II, 861 - 2.

British Medical Journal (1939d) "Medical Notes in Parliament" British Medical Journal 1939 II, 1211.

British Medical Journal (1940) "Scientific Advisory Committee on Food" British Medical Journal 1940 I, 946.

British Medical Journal (1947) "World Food Situation" (Report of a meeting of the Anglo-Austrian Society addressed by J.R.Marrack and chaired by A.L.Bacharach" British Medical Journal 1947 I, 555.

British Medical Journal (1958) "G.M.Wishart" (obituary) British Medical Journal 1958 II, 330.

British Medical Journal (1963) "H.E.Magee" (obituary) British Medical Journal 1963 I, 777.

British Medical Journal (1968) "Simon Yudkin obituary" British Medical Journal 1968 II, 247, 309.

British Medical Journal Supplement (1939) "Nutrition in its Wider Aspects. National Conference called by the British Medical Association" British Medical Journal 1939 I Supplement 29/4/39, 221 - 2, and 6/5/39, 249 - 55.

Burnet, E., and Aykroyd, W.R. (1935) "Nutrition and Public Health" Quarterly Journal of the League of Nations 4, 323.

Burnett, J. (1966) Plenty and Want. A social history of diet in England from 1918 to the present day. T.Nelson, London and Edinburgh.

Calder, J.M. (1968) "Miss Mary Andross, Obituary", Nutrition xxii (2), 98 - 9.

Cameron, H.C. (1924) "Infant dietetics, eggs and Professor Mellanby" (letter to the Editor commenting on Mellanby (1924).) The Lancet 1924 I, 1028.

Caneva, Kenneth L. (1978) "From Galvinism to electrodynamics: The transformation of German physics and its social context" Historical Studies in the Physical Sciences ix, 63 - 159.

Carnegie U.K. Trust (1934) Twentieth Annual Report for the Year Ending 31/12/33 T. and A. Constable, Edinburgh.

Carter, K.C. "The Germ theory, beriberi, and the deficiency theory of disease" Medical History 21, 119 - 36.

Cathcart, E.P. (1912), (1921) The Physiology of Protein Metabolism (Monographs on Biochemistry edited by R.H.A.Plimmer and F.G.Hopkins.) Longmans, Green and Co Ltd., London.

Cathcart, E.P. (1914) "The Role of Carbohydrates in Nutrition" British Medical Journal 1914 II, 503 - 4, 540.

Cathcart, E.P. (1918) "Method of estimating energy expenditure by indirect calorimetry" J. R. Army Medical Cps 31, 339.

Cathcart, E.P. (1922a) "The influence of carbohydrate and fat on nitrogen distribution in the urine" Biochemical Journal 16, 747 - 53.

Cathcart, E.P. (1922b) "On basal metabolism" British Medical Journal 1922 II, 747.

Cathcart, E.P. (1923a) "Energy Expenditure in Relation to Food" in Macpherson et al (1923), 108 - 32.

Cathcart, E.P. (1923b) "The Foundations of a Rational Diet" Proceedings of the Royal Philosophical Society of Glasgow 52, 175 - 85.

Cathcart, E.P. (1925) "Protein metabolism and muscular activity" Physiological Reviews 5, 225.

Cathcart, E.P. (1927) "Efficiency or Effectivity?" Nature 119, 599.

Cathcart, E.P. (1928a) "Conditioned Reflexes" Glasgow Medical Journal 110, 65.

- Cathcart, E.P. (1928b) "Dynamic Biochemistry" Edinburgh Medical Journal 35, 21 - 29.
- Cathcart, E.P. (1928c) The Human Factor in Industry Oxford University Press, London.
- Cathcart, E.P. (1928d) Nutrition and Dietetics Benns Sixpenny Library, London.
- Cathcart, E.P. (1929a) "Nutrition" Encyclopedia Britannica 14th edition, xvi
- Cathcart, E.P. (1929b) "Diarmid Noel Paton 1859-1928" Procs Royal Soc 104 Ser B, ix - xii.
- Cathcart, E.P. (1931a) "The Significance of Dietary Studies" J Roy San Inst 52, 178.
- Cathcart, E.P. (1931b) "The foundations of a national diet" Medical Officer 45, 131 - 4, 143 - 6.
- Cathcart, E.P. (1931c) "Some of the difficulties of the quantitative assessment of human diets" Nutrition Abstracts and Reviews 1, 6.
- Cathcart, E.P. (1933) "Preventative Medicine and Public Health" Glasgow Medical Journal 119, 185 - 91.
- Cathcart, E.P. (1935a) "Nutrition and Public Health" Public Health 48, 286 - 7.
- Cathcart, E.P. (1935b) "Food and Nutrition" Scottish Nurse July 1935, 193 - 5.
- Cathcart, E.P. (1938) "Fitness; its promotion" Journal of Physical Education 30, 81 - 7.
- Cathcart, E.P. (1944) "Communal Health" The British Way Series 10. The University Press, Glasgow.
- Cathcart, E.P. (1947) "The Role of Nutrition in Social Medicine" Proceedings of the Nutrition Society 5, 45.
- Cathcart, E.P. and Paton D.N. (1911) "Nutrition" Encyclopedia Britannica 11th edition vol xix.
- Cathcart, E.P. and Benedict, F.G. (1912) "Muscular Work; a metabolic study with special reference to the efficiency of the human body as a machine." Carnegie Institute Publications 187 Washington, USA.
- Cathcart, E.P., and Paton, D.N. (1915) A Practical Course in Chemical Physiology 3rd ed., W.Green & Sons, Edinburgh.
- Cathcart, E.P., and Orr, J.B. (1919) Energy expenditure of

the infantry recruit in training HMSO, London.

Cathcart, E.P., Greenwood, M., and Lothian, N.V. (1920) "A note on the rate of marching and the expenditure of energy in man." J. R. Army Med. Cps. 34, 297.

Cathcart, E.P. and Stevenson, A.C. (1922) "Energy expenditure in man. The cost of positive, negative and static work." J. R. Army Med. Cps. 38, 1.

Cathcart, E.P., Paton D.N. and Greenwood, M. (1924) "A Study of Miners' Dietaries". Med Res Counc Spec Rep Ser 87 HMSO, London.

Cathcart, E.P., Bedale, E.M., Blair, C., MacLeod, K., Wetherhead, E. (1928) "The Physique of Women in Industry. A Contribution towards the determination of the Optimun Load" Industrial Fatigue Research Board Report 44 HMSO, London.

Cathcart, E.P., and Dawson, S. (1928) "Persistence, a characteristic of remembering" British Journal of Psychology 18, 262.

Cathcart, E.P., Paton, D.N., and Pembrey, M.S. (1929) Practical Physiology 3rd ed., Arnold, London.

Cathcart, E.P. and Murray, A.M.T. (1931) "A study in nutrition; 154 St. Andrews families". Med Res Counc Spec Rep Ser 151 HMSO, London.

Cathcart, E.P. and Murray, A.M.T. (1932) "Studies in nutrition; an enquiry into the diets of families in Cardiff and Reading." Med Res Counc Spec Rep Ser 165 HMSO, London.

Cathcart, E.P., Hughes, D.E.R., and Chalmers, J.G. (1935) "The Physique of Man in Industry" Medical Research Council and Industrial Fatigue Research Board Report 71 HMSO, London.

Cathcart, E.P. and Murray, A.M.T. (1936) "A dietary survey in terms of actual foodstuffs consumed." Med Res Counc Spec Rep Ser 151 HMSO, London.

Cathcart, E.P. and Murray, A.M.T. and Beveridge, J.B. (1940) "An enquiry into the diet of families in the Highlands and Islands of Scotland." Med Res Counc Spec Rep Ser 242 HMSO, London.

Chalmers, A.K. (1930) The Health of Glasgow, 1818 - 1925, an outline. Glasgow Corporation.

Chambers, W.H. (1952) "Max Rubner (June 2 1854 - April 27, 1932)" Journal of Nutrition 48, 3 - 12.

Charities Aid Foundation (1985) Directory of Grant-Making Trusts Charities Aid Foundation, Tonbridge, Kent.

Charity Organisation Society (1931) The Prevention and Relief of Distress. A Handbook of Information Respecting the Statutory and Voluntary Means available for the Relief of Distress and the Improvement of Social Conditions in the County of London. (Being Sir Charles Loch's "How to Help Cases of Distress", revised, re-arranged and brought up to date for the Charity Organisation Society.) P.S.King and Sons Ltd and the Charity Organisation Society, London.

Checkland, O, and Lamb, M. (1982) Health Care as Social History. The Glasgow Case Aberdeen University Press, Aberdeen.

Chick, H., Hume, M., and Macfarlane, M. (1971) War on Disease: A History of the Lister Institute, Andre Deutsch Ltd., London.

Childrens Nutrition Council (1940) "The Wage-earner's Diet: Risk of Malnutrition" (letter) British Medical Journal 1940 II, 29.

Childrens Nutrition Council, Edinburgh (1940) Nutrition and Local Government in Scotland. Childrens Nutrition Council, Edinburgh.

Childrens Nutrition Council, Edinburgh (1941) Food and the War - A Report on an inquiry into the adequacy of the incomes and expenditure of 103 families. Childrens Nutrition Council, Edinburgh.

Clark, Colin (1937) "The Retail Trade and Malnutrition" New Fabian Research Bureau Quarterly, Spring 1937.

Clark, F.E. le Gros (1936) Men, Medicine and Food in the USSR Lawrence and Wishart, London.

Clark, F.E. le Gros (1938) "Whitehall in the Chaos" in National Fitness a brief essay on contemporary Britain edited by F.E. le Gros Clark., MacMillan and Co, London, 116 - 36.

Clark, F.E. le Gros (1942) The School Child and the school canteen Hertfordshire County Council.

Clark, F.E. le Gros (1943a) "Hot Springs and Humanity. Problems of a freedom from Want Economy" Discovery July 1943.

Clark, F.E. le Gros (1943b) The School Child's taste in Vegetables Hertfordshire County Council.

Clark, F.E. le Gros (1944) Contribution to the discussion at Nutrition Society meeting on "Problems of Collective Feeding", 30/5/42. Proceedings of the Nutrition Society (1944) 1 (1), 90.

Clark, F.E. le Gros (1945) Community Restaurants by Design London Council of Social Service, London.

Clark, F.E. le Gros (1947a) "Discussion" 23 - 5 in London Council of Social Service (1947).

Clark, F.E. le Gros (1947b) "The Elements of Food Education" Health Education Journal 5, 134 - 7.

Clark, F.E. le Gros (1947c) Feeding the Human Family. Science Plans for the World Larder Sigma Introduction to Science 11, Sigma books Ltd., London.

Clark, F.E. le Gros (1948) Social History of the school Meals Service National Council of Social Service, London.

Clark F.E. le Gros (1949) "Food health and education" British Medical Journal I, 866 - 7.

Clark, F.E. le Gros and Titmuss, R.M. (1939) Our Food Problem. A Study of national Security Penguin, Harmondsworth.

Clark, F.E. le Gros and Pirie, N.W. (1951) Four Thousand Million Mouths. Scientific Humanism and the Shadow of World Hunger Oxford University Press, London.

Clifford, W.M., and Mottram, V.H. (1929) Properties of Food. A Practical Text-Book for Teachers of Domestic Science University of London Press Ltd., London.

Coleman, William (1970) "Bateson and chromosomes: Conservative thought in science" Centaurus xv, 228 - 314.

Committee Against Malnutrition (1937) Children in Spain To-day. Their Welfare and their Needs. (M.C.Ashby, J.M.Campbell, H.Chick, D.Gladstone, E.M.Pye.)

Committee of The Society for Freedom in Science (1953) The Society for Freedom in Science: Its Origins, Objects and Constitution 3rd edition, Oxford.

Committee on Nutrition in the Colonial Empire (1939) Nutrition in the Colonial Empire HMSO, London.

Committee upon Dental Disease (1925) "Reports of the Committee for the Investigation of the Causes of Dental Disease I. The Structure of Teeth in Relation to Dental Disease" Med Res Counc Spec Rep Ser 97 HMSO, London.

Committee upon Dental Disease (1931) "The Influence of Diet on Caries in Children's Teeth. [Interim Report] Med Res Counc Spec Rep Ser 159 HMSO, London.

Conservative Party (1935) "Nutrition" Pages 233 - 4 in General Election 1935: Notes for Speakers and Workers

Conservative Party Central Office.

Coote, C. (1965) A Companion of Honour. The Story of Walter Elliot Collins, London.

Copeman, S.M. and Greenwood, Major (1926) "Diet and Cancer" Reports on Public Health and Medical Subjects 36 HMSO, London.

Copping, A.M. (1951) "Teaching of Nutritional Principles" Nutrition V (2) 204 - 6.

Copping, A.M. (1953) "The New Degree in Nutrition" Proceedings of the Nutrition Society 12, 177 - 8.

Copping, A.M. (1964) "Sir Jack Drummond, FRS - A Biographical Sketch" Journal of Nutrition 82, 3 - 9.

Copping, A.M. (1978a) "The History of the Nutrition Society" Proceedings of the Nutrition Society 37, 105 - 39.

Copping, A.M. (1978b) "Dame Harriette Chick 1875 - 1977 Obituary Notice" British Journal of Nutrition 39, 3 - 4.

Corry Mann, H. (1922) "Rickets. The Relative Importance of Environment and Diet as Factors of Causation: and Investigation in London." Med Res Counc Spec Rep Ser 68 HMSO, London.

Corry Mann, H. (1926) "Diets for Boys During School Age" Med Res Counc Spec Rep Ser 105 HMSO, London.

Craig, M.H., Wyllie, R.M., Coutts, E., Nettleship, I., Philip, F., Sandison, J.S., Stevenson, M.C. (1948) "The Fat Required for Good Cooking and to make Food Palatable" British Journal of Nutrition 2, 187 - 204.

Crawford, W. and Broadly, H. (1938) The People's Food Heineman, London.

Crowden, G.P. (1932) "The Minimum Cost of a Physiologically Adequate Diet for Working Class Families" The Lancet 1932 I, 899 - 901.

Crowther J.G. (1952) British Scientists of the Twentieth Century Routledge & Kegan Paul, London.

Crowther, J.G. (1970) Fifty Years with Science Barrie and Jenkins, London.

Cruikshank, E.M. (1978) "L.J.Harris Obituary Notice" British Journal of Nutrition 39, 1.

Cuthbertson, D.P. (1963a) (ed) Progress in Nutrition and Allied Sciences Oliver and Boyd, Edinburgh and London.

Cuthbertson, D.P. (1963b) "History of the Rowett Institute 1945 - 63" in Cuthbertson (1963a), 17 - 22.

Cuthbertson, D.P. (1963c) "The metabolic response to injury and its nutritional implications" in Cuthbertson (1963) 367 - 80.

Cuthbertson, D.P. (1978) "Post-traumatic metabolism: A multi-disciplinary Challenge" Surgical Clinics of North America 58 (5), 1045 - 54.

Dairying and Animal Products Committee (1938) Dairy Research Agricultural Research Council, HMSO, London.

Dale, H.E. (1956) Daniel Hall Pioneer in Scientific Agriculture John Murray, London.

Dale H.H. (1948) "Frederick Gowland Hopkins" Obituary Notices of Fellows of the Royal Society 6 (17), 115 - 45.

Dale H.H. (1955) "Sir Edward Mellanby" Biographical Memoirs of the Fellows of the Royal Society 1, 193 - 222.

Dale H.H. (1964) "Sir Michael Foster KCB FRS a secretary of the Royal Society" Notes and Records of the Royal Society of London xix, 10 - 32.

Dam, H. (1966) "Historical Survey and Introduction International Symposium of recent advances in research on vitamin K and related quinones" Vitamins and Hormones 24, 295 - 306.

Darling, G. (1941) The Politics of Food Labour Book Service, London.

Davin, A. (1978) "Imperialism and the Care of Motherhood" History Workshop Spring, 9 - 65.

Dawson, Lord (1942) Letter on the proposed "Nutrition Council" The Times 11/9/42.

Day, P.L. (1957) "Henry Clapp Sherman, 1875 - 1955" Journal of Nutrition 61 (1), 3 - 11.

Dean, R.F.A. (1953) "Plant Proteins in Child Feeding" Med Res Counc Spec Rep Ser 279 HMSO, London.

Department of Health for Scotland (1936) Report of the Committee on Scottish Health Services (Cmd 5204) HMSO, Edinburgh.

Department of Health and Social Security (1980) Rickets and Osteomalacia Report of The Working Party on Fortification of Food with Vitamin D. Committee on medical Aspects of Food Policy. HMSO, London.

Department of Health and Social Security (1970) "Interim report on Vitamin D by the Panel on Child Nutrition" Reports on Public Health and Medical Subjects 123 HMSO, London.

Department of Scientific and Industrial Research (1919) Report of the Food Investigation Board for the Year 1918 HMSO, London.

Deuel, H.J. (1950) "Graham Lusk" Journal of Nutrition 1950, 3 - 12.

Drummond, J.C. (1920) "The nomenclature of the so-called accessory food factors (vitamins)" Biochemical Journal 14, 660.

Drummond, J.C. Wilbraham, A. and Hollingsworth, D. (1957) The Englishman's Food. A History of Five Centuries of English Diet Jonathan Cape, London.

Drury, A.N. (1948) "The Lister Institute of Preventative Medicine" Proceedings of the Royal Society Series B 135, 405 - 18.

Dryerre, H. (1944) Contribution to the discussion on the Hot Springs Conference Proceedings of the Nutrition Society 2 (3 & 4), 174.

Dwork, D. (1984) The History of the Infant Welfare Movement in England 1898-1918 PhD thesis, University College, London.

Dyhouse, C. (1978 - 9) "Working Class Mothers and Infant Mortality in England 1895-1916. J. Social Hist 12 248 - 81.

Dyhouse, C. (1981) Girls Growing up in Late Victorian and Edwardian England Routledge & Kegan Paul, London.

Eckstein, H. (1959) The English Health Service: Its Origins, Structure and Achievements Harvard University Press, Cambridge, Mass.

Eden, A. and Buttress, F.A. (1969) "Rations for Livestock - A Historical Survey" in University of Cambridge Agricultural Research and Teaching at Cambridge 2.

Edinburgh Medical Journal (1923) "Harry Rainy Obituary" Edinburgh Medical Journal xxx (II), 69 - 72.

Elliot, W. (1922) Contribution to discussion on the aetiology of rickets. British Medical Journal 1922 II, 857.

Engineers Study Group (1936) Food and the Family Budget Engineers Study Group, London.

Evans, E. and Miller, D.S. (1977) "The effects of ephedrine on the oxygen consumption of fed and fasted subjects" Proceedings of the Nutrition Society 36, 136A.

Faber, H.K. (1920) "Von Pirquet's Feeding System" Am J Dis Child 19, 478.

Faber, H.K. (1923) "A Critique of the Pirquet Feeding System" Am J Dis Child 25, 339 - 49.

Ferguson, M. (1918) "Social and Economic Factors in the Causation of Rickets" Med Res Counc Spec Rep Ser 20 HMSO, London.

Findlay, L. (1908) "The Etiology of Rickets. A Clinical and Experimental Study" British Medical Journal 1908 II, 13 - 7.

Findlay, L. (1909) "The Condition of the Blood in Experimental Rickets" British Medical Journal 1909 I, 1173 - 7.

Findlay, L. (1915) "The Etiology of Rickets: A Statistical Study of the Home Conditions of 400 to 500 Rachitic Children" The Lancet 1915 I, 956.

Findlay, L. (1917) "The Causes of Infantile Mortality" Med Res Counc Spec Rep Ser 10, HMSO, London, 37 - 42.

Findlay, L. (1921) "Diet as a Factor in the Cause of Rickets" Archives of Pediatrics 38, 151.

Findlay, L. (1922a) "A Review of the Work Done by the Glasgow School on the Aitiology of Rickets" The Lancet 1922 I, 825 - 31.

Findlay, L. (1922b) "Discussion on the Etiology of Rickets. Opening Paper I." British Medical Journal 1922 II, 846 - 9.

Fisher, D. (1978) "Rockefeller Philantropy and the British Empire: The Creation of the London School of Hygiene and Tropical Medicine" History of Education 7 (2), 129 - 43.

Fletcher, W.M., and Hopkins, F.G. (1907) "Lactic Acid in the Amphibian Muscle" Journal of Physiology 35, 247.

Follis, R.H. jr. (1960) "Cellular pathology and the development of the deficiency disease concept" Bull Hist Med 34, 291 - 317.

Food and Agricultural Organisation (1962) Education and Training in Nutrition Freedom from Hunger Campaign Basic Study No 6, Rome.

Forman, Paul "Weimar Culture, Causality and Quantum Theory, 1918 - 1927." Historical Studies in the Physical Sciences

Franklin, A.W. (1951) "A Handlist of the Writings of Sir Robert Hutchison" Archives of the Diseases of Children 26, 469 - 75.

Franklin, Kenneth J. (1953) Joseph Barcroft 1872 - 1947. Blackwell Scientific Publications, Oxford.

French, R.D. (1971) "Some Problems and Sources in the foundation of modern physiology in Great Britain" History of Science 10, 28 - 55.

Friend, G.E. (1935) The Schoolboy. A study of his Nutrition, Physical Development and Health W.Heffer & Sons Ltd, Cambridge.

Funk, C. (1912) "The etiology of the deficiency diseases" J. State Medicine 20, 341 - 68.

Garry, R.C. (1953) "Presidential Address" Proceedings of the Nutrition Society 12, 270.

Garry, R.C. (1954) "Edward Provan Cathcart" (Obituary) Glasgow medical Journal 35, 72 - 4.

Garry, R.C., Passmore, R., Warnock, G.M. and Durnin, J.V.G.A. (1955) "Studies on the Expenditure of Energy and Consumption of Food by Miners and Clerks, Fife, Scotland, 1952." Med Res Counc Spec Rep Ser 289 HMSO, London.

Garry, R.C., Thomson, W., and Leitch, Isabella (1972) "John, Baron Boyd Orr of Brechin 1880 - 1971" Nutrition Abstracts and Reviews 42, 1 - 11.

Geison, Gerald L. (1969) "The Protoplasmic Theory of Life and the vitalist - mechanist Debate" Isis 60, 272 - 92.

Geison, Gerald L. (1972) "Social and Institutional Factors in the Stagnancy of English Physiology, 1840 - 1870" Bulletin of the History of Medicine 1972, 30 - 58.

Geison, Gerald L. (1978) Michael Foster and the Cambridge school of Physiology Princeton University Press, New Jersey.

Gilbert, Bentley B. (1966) The Evolution of National Insurance in Great Britain Michael Joseph, London.

Gilbert, Bentley B. (1970) British Social Policy 1914 - 1939 B.T. Batsford Ltd, London.

Golby, C.W. (1964) "The Role of the Experimental Psychologist" in Yudkin and McKenzie (1964) 75 - 89.

Goodman, Neville M. (1970) Wilson Jameson George Allen and

Unwin Ltd., London.

Graham, S (1957) "Leonard Findlay (1878-1947)" in Paediatric Profiles Veeder (1957).

Graham, G.E. (1964) "The Food Manufacturer in a World of Economic Reality" in Yudkin and McKenzie (1964) 125 - 34.

Greenwood, M. and Dunlace, Viscount (1918) "An Enquiry into the Composition of Dietaries with Special Reference to the Dietaries of Munition Workers" Med Res Counc Spec Rep Ser 13 HMSO, London.

Greenwood, M. and Thompson, C.M. (1918) "An epidemiological study of the food problem" Proceedings of the Royal Society of Medicine 1918 xi Section of Edidemiology 61 - 84.

Greenwood, M. (1926) "A Report on the Natural Duration of Cancer" Ministry of Health Reports on Public Health and Medical Subjects 33 HMSO, London.

Greenwood, M., and Copeman, S.Monckton (1926) "Diet and Cancer with Special reference to the incidence of cancer upon members of certain religious orders." Ministry of Health Reports on Public Health and Medical Subjects 36 HMSO, London.

Gummett, P.J. and Price, G.L. (1977) "An approach to the Central Planning of British Science: The Formation of the Advisory Council on Scientific Policy" Minerva XV (V) 117 - 43.

Gyorgy, P (1964) "The History of Vitamin B6" Vitamins and Hormones 22, 360 - 5.

Gyorgy, P (1967) "Reminiscences on the Discovery and Significance of some of the B Vitamins" Journal of Nutrition 91 Sup 1, 5 - 9.

Hall. D. (1935) "Science and Agriculture" in Hall et al (1935), 13 - 29.

Hall. D., Crowther, J.G., Bernal, J.D., Mottram, V.H., Charles, E., Garer, P.A., Blackett, P.M.S., and Soddy, F. (1935) The Frustration of Science George Allen and Unwin, London.

Halliburton, W.D. and Paton, D.N. (1919) "Fats as Foods. Introduction" Journal of Physiology 52, 328 - 46.

Hambidge, Gove (1955) The Story of FAO D.Van Nostrand Company, New York.

Hammond, R.J. (1951) Food Volume I, The Growth of Policy. HMSO, London.

Hamilton, David (1979) "The Betrayal of Boyd Orr" The Weekend Scotsman (Saturday Supplement of The Scotsman newspaper) 26/5/79, 1.

Halnan, E.T. (1957) "Animal Nutrition Research at Cambridge - A retrospect" in Agricultural Research and Teaching at Cambridge 1 University of Cambridge, School of Agriculture.

Hamill, J.M. (1921) "Diet in Relation to Normal Nutrition" Reports on Public Health and Medical Subjects 9 Ministry of Health, HMSO, London.

Hamill, J.M. (1923) "Food Rations in the United Kingdom" in Macpherson et al (1923), 1 - 38.

Harris, L.J. (1944) "Assessment of Level of Nutrition in Man" Proceedings of the Nutrition Society 1 (1 & 2), 7 - 9.

Harris, L.J. (1949) "Exerpts from the Scientific Papers of Sir F.G.Hopkins" in Needham and Baldwin (eds) (1949), 41 - 110.

Harris, J.A. and Benedict, F.G. (1919) A Biometric Study of Man Carnegie Institute.

Harvey, D. (1963) "Family Diet and Health in Pre-War Britain" in Cuthbertson (1963a), 323 - 8.

Harwood, Jonathan (1976) "The race-intelligence controversy: A sociological approach. I: professional factors" Social Studies of Science vi, 369 - 94.

Harwood, Jonathan (1977) "The race-intelligence controversy: A sociological approach. II: external factors" Social Studies of Science vii, 1 - 30.

Harwood, Jonathan (1979) "Hereditary, environment, and the legitimation of social policy" in Barnes and Shapin eds, 231 - 51.

Hess, A.F. (1930) Rickets, including Osteomalacia and Tetany Henry Kimpton, London.

Hess, A.F. and Unger, L.J. (1917) "Prophylactic Therapy for Rickets in a Negro Community" J. Am. Med. Assoc. 69, 1583.

Hess, A.F. and Unger, L.J. (1920) "The Clinical Role of the Fat-Soluble Vitamin: Its Relationship to Rickets" J. Am. Med. Assoc. 74 217.

Hess, A.F. and Unger, L.J. (1921) "An interpretation of the Seasonal occurence of Rickets" Amer J. Dis. Child. 22, 186.

Hill, A.V. (1949) "William Bate Hardy" in Wikham-Legg (ed) Dictionary of National Biography 1931 - 40, Oxford University Press, London.

Hogben, Lancelot (1950) "Major Greenwood, 1880-1949" Obituary Notices of Fellows of The Royal Society 7, 19.

Hollingsworth, D.F. (1947) Nutritional Policies in Great Britain, 1939 - 46 Journal of the American Dietetic Association 23 (2), 96 - 100.

Hopkins, F.G. (1906) "The Analyst and the Medical Man" Analyst 31, 385. Also in Needham and Baldwin (1949).

Hopkins, F.G. (1908) "Sir Thomas Stevenson Obituary Notice" Analyst 33, 385.

Hopkins, F.G. (1912a) "Dr Pavy and Diabetes" Science Progress 7, 13.

Hopkins, F.G. (1912b) "Feeding Experiments illustrating the importance of Accessory Food Factors in Normal Diets" Journal of Physiology. 44, 425.

Hopkins, F.G. (1913) "The Dynamic Side of Biochemistry: Address of the Sectional President to the Physiological Section, British Association, Birmingham Meeting 1913. Rep. Brit. Ass., 652; also British Medical Journal 1913 II, 713; The Lancet 1913 II, 851.

Hopkins, F.G. (1916) "Newer Standpoints in the Study of Nutrition" J Chem Soc 109, 629.

Hopkins, F.G. (1919) "The Practical Importance of Vitamins" British Medical Journal 1919 I, 507.

Hopkins, F.G. (1920a) "The Future of Medical Practice from the Point of View of Medical Research" British Medical Journal 1920 II, 40 - 2.

Hopkins, F.G. (1920b) "Discussion on the Present Position of Vitamins in Clinical Medicine. Opening Paper." British Medical Journal 1920 II, 147 - 9.

Hopkins, F.G. (1921) "Recent Advances in Science in Relation to Practical Medicine and the Nutritional Requirement of the Body" (Huxley Lecture) The Lancet 1921 I, 1.

Hopkins, F.G. (1923a) "Present Position of the Vitamin Problem" (1st Cameron Prize Lecture) British Medical Journal 1923 II, 691.

Hopkins, F.G. (1923b) "Rickets as a deficiency disease" (2nd Cameron Prize Lecture) British Medical Journal 1923 II, 748.

Hopkins, F.G. (1923c) "An Oxidative Mechanism in the Living Cell" The Lancet 1923 I, 1251.

Hopkins, F.G. (1924) "Biochemistry: Its Present Position and Outlook" The Lancet I, 1247 - 52.

Hopkins, F.G. (1931a) "The Clinician and the Laboratory Worker" in Needham (1949), 206 - 10.

Hopkins, F.G. (1931b) "Nutrition and Human Welfare" Nutrition Abstracts and Reviews 1, 3.

Hopkins, F.G. (1944) Introductory Speech at the First Nutrition Society Scientific Conference (1941) Proceedings of the Nutrition Society 1 (1 & 2), 3 - 4.

Hopkins F.G. (1949) "Autobiography of Frederick Gowland Hopkins, written in 1937" in Needham and Baldwin (eds) 3 - 25.

Hopkins, F.G. and Martin, C.J. (1942) "Arthur Harden 1865-1940" Obituary Notices of Fellows of the Royal Society 4, 3 - 14.

Hopkins, F.G. and Smith, F.E. (1934) "William Bate Hardy Obituary Notice" Obituary Notices of Fellows of the Royal Society 3, 327.

Hopkins, F.G. and Willcock, E.G. (1906) "The Importance of Individual Amino-acids in Metabolism: Observations on the Effect of Adding Typtophane to a Dietary in which Zein is the Sole Nitrogenous Constituent" Journal of Physiology 35, 88.

Hopkinson, Diana (1954) Family Inheritance. A Life of Eva Hubbock Staples Press, London.

Horder, Lord (1942) Letters on the proposed "Nutrition Council" The Times 8/9/42 and 16/9/42.

Huldschinsky, K. (1919) "Heiling von Rachitis durch Kuenstliche Hohensonne" Deutsche med Wochenschrift 45, 712.

Hume, E.M.M. (1944) "Opportunities for Nutrition Research in the Work of Relief" Proceedings of the Nutrition Society 2 (3 & 4), 204 - 10.

Hunt, S. (1976) "The Food Habits of Asian Immigrants" in Getting the Most out of Food 11 Van den Berghs & Jurgens Ltd, Burgess Hill, 14 - 53.

Hunt, S.P., O'Riordan, J.L.H., Windo, J., and Truswell, A.S. (1976) "Vitamin D status in different subgroups of British Asians" British Medical Journal 1976 II, 1351 - 4.

Hunter, Donald (1951) "Sayings of Robert Hutchison" Archives of Diseases of childhood 26 467 - 8.

Hutchinson, Enid (1961) A History of the British Dietetic Association Newman Books, London.

Hutchinson, Eric (1972) "A Fruitful Cooperation Between Government and Academic Science: Food Research in the United Kingdom" Minerva X(1), 19 - 50.

Hutchison, H.S. and Shah, S.J. (1922) "The Etiology of Rickets, Early and Late" Quart J. Med. 15, 167.

Hutchison, R. (1900) Food and the Principles of Dietetics Edward Arnold, London.

Hutchison, R. (1920) Contribution to "Discussion on the Importance of Accessory Food Factors (Vitamines) in the Feeding of Infants" Proc Roy Soc Med 13 Sect Stud Dis Children 57 (2 & 3), 86 - 7.

Hutchison, R. (1934) "The History of Dietetics" The Practitioner No 787, Jan 1934, CXXXII, 1 - 24.

Hutchison, R. (1935a) Contribution to "Discussion on the Assessment of the state of nutrition" at a meeting of the Section of Epidemiology and State Medicine. Proc Roy Soc Med, 728.

Hutchison, R. (1935b) "The Assessment of Nutrition" British Medical Journal 1935 I, 220 - 2.

Hutchison, R. (1935c) "Nutrition and Public Health" Public Health 48, 289 - 91.

Hutchison, R. (1936) "The Nutrition Question" The Lancet 1936 I, 583 - 5.

Hutchison, R. and Rainy, H. (1897) Clinical Methods. A Guide to the Practical Study of Medicine Cassell and Co Ltd., London.

Hutt, A. (1933) The Condition of the Working Class in Britain Martin Laurence Ltd., London.

Ihde, A.J. and Becker, S.L. (1971) "Conflict of Concepts in Early Vitamin Studies" J Hist Biol 4, 1 - 33.

International Labour Office (1936) Workers Nutrition and Social Policy League of Nations, Geneva.

Jansen B.C.P. (1950) "C.Eijkman" J Nutrition 42, 3 - 8.

Jansen B.C.P. (1956) "Early Nutritional Researches on Beriberi leading to the discovery of vitamin B1" Nutrition Abstracts and Reviews 26, 1 - 14.

Jephcott, Harry "A.L.Bacharach 1891 - 66" Chemistry and Industry 1/10/66, 1651 - 53.

- Judd, P.A. and Truswell, A.S. "Comparison of the effects of high and low-methoxyl pectins on blood and faecal lipids in man" British Journal of Nutrition 48 451 - 57.
- Kay, H.D. (1972a) "John Boyd Orr - Baron Boyd Orr of Brechin Mearns" Biographical Memoirs of the Fellows of the Royal Society 18, 43 - 81.
- Kay, H.D. (1972b) "A short History of the Food Group" J. Sci Food Agric. 23 (Feb 1972) 127 - 60.
- Kirkland, J. (1947) "The Teaching of Cookery and Nutrition in Schools" British Journal of Nutrition 1, 90 - 5.
- Kodicek, E. (1971) Cambridge and the Evolution of the Knowledge of Vitamins" in Rook, A. (ed) Cambridge and its contribution to medicine: proceedings of the 7th British Congress of the History of Medicine University of Cambridge 10 - 13 Sept, 1969.
- Kohler, R.E. (1972) "The reception of Eduard Buchner's discovery of cell-free fermentation" Journal of the History of Biology v, 327 - 53.
- Kohler, R.E. (1973) "The enzyme theory and the origin of biochemistry" Isis lxiv, 181 - 96.
- Kohler, R.E. (1978) "Walter Fletcher, F.G.Hopkins and the Dunn Institute of Biochemistry: a case study in the patronage of science. Isis 69, 331 - 5.
- Kohler, R.E. (1982) From Medical Chemistry to Biochemistry. The making of a Biochemical Discipline Cambridge University Press, Cambridge.
- Kon, S.K. (1967) "Alfred Louis Bacharach" (Obituary Notice) British Journal of Nutrition 21, 235.
- Korenchevski, V. (1922) "The Aetiology and Pathology of Rickets from an Experimental Point of View" Med Res Council Spec Rep Ser 71, HMSO, London.
- Krebs, H. (1942) Letter on the proposed "Nutrition Council" The Times 25/9/42.
- Kruse, H.D. (1940) Public Health Reports, Washington 55, 157.
- Kruse, H.D. (1941) Millbank Memorial Fund Quarterly Bulletin 19, 207.
- Kuhn, T.S. (1970) The Structure of Scientific Revolutions (International Encyclopedia of Unified Science 2 (2)) University of Chicago Press, Chicago and London.

Laithwaite, G. (1971) "Hope, Victor Alexander John, Second Marquess of Linlithgow, 1887 - 1952" in Williams, E.T., and Palmer, H.M. (eds) Dictionary of National Biography Oxford University Press.

The Lancet (1899a) "Obituary William Rutherford MD Edin FRS" The Lancet 1899 I, 538 - 41.

The Lancet (1899b) "Bust of Professor Rutherford" The Lancet 1899 II, 185.

The Lancet (1919) "The Need for a Food Board" (Report of a meeting at which E.H.Starling spoke about "Food in Relation to health.") The Lancet 1919 I, 591.

The Lancet (1939) "Dr G.M.C.M'Gonigle" (Obituary) The Lancet 1939 II, 346 - 7.

The Lancet (1973) "L.J.Harris" (Obituary) The Lancet 1973 3, 54.

Lane, W.A. (1925) "The First and the Last Kink" The Lancet 1925 I, 1209 - 10.

Layton, T.B. (1956) Sir William Arbuthnot Lane Bt Livingstone, Edinburgh and London.

League of Nations (1931) Report of the Conference on Vitamin Standards Publications Department of the League of Nations, Geneva.

League of Nations (1932a) "Standardisation of certain methods used in making dietary studies" Quart Bull Health Organization League of Nations I, 3.

League of Nations (1932b) "The Economic Depression and Public Health" Memorandum prepared by the Health Section of the league of Nations. Quart Bull Health Organization League of Nations I, 425 - 76.

League of Nations (1933) "The Most Suitable Methods of Detecting Malnutrition Due to the Economic Depression" Quart Bull Health Organization League of Nations II, 116 - 29.

League of Nations (1934) "Report of the Second Conference on Vitamin Standards", 12 - 14 June, 1934, London. Quart Bull Health Organization League of Nations III, 428 - 40.

League of Nations (1935) Report on the Physiological bases of Nutrition League of Nations Publications, Geneva.

League of Nations (1936) "Report on the Physiological Bases of Nutrition" (Revised and Enlarged) Quart Bull Health Organization League of Nations V, 391.

League of Nations (1937a) "Report on the Work of the Group of Experts Appointed to Study Methods of Assessing the State of Nutrition in Infants and Adolescents" Quart Bull Health Organization League of Nations VI, 129 - 203.

League of Nations (1937b) Final Report of the Mixed Committee of the League of Nations: The Relation of Nutrition to Health, Agriculture and Economic Policy League of Nations Publications, Geneva.

League of Nations (1938) "Report by the Technical Commission on the Work of its Third Session, 15/11 - 20/11 1937." Quart Bull Health Organization League of Nations VII, 460 - 502.

Leitch, I. (1963) "Commonwealth Bureau of Animal Nutrition" in Cuthbertson (1963a), 381 - 8.

Lewis, J. (1980) The Politics of Motherhood: Child and Maternal Welfare in England 1900 - 1939 Croom Helm, London.

Lindsay, Dorothy E. (1913) Report upon the Study of the Diet of the Labouring Classes in the City of Glasgow carried out under the auspices of the Corporation of the City. (With introduction by Professor D.N.Paton.) Corporation of Glasgow, Glasgow.

Lindsay, J., and Mottram, V.H. (1927) Manual of Modern Cookery University of London Press, London.

Lloyd, E.M.H. (1936) "Food Supplies at Different Income Levels" Journal of Proceedings of the Agricultural Economics Society IV (2) April 1936, 89 - 110.

London Council of Social Service (1943) The Communal Restaurant. A Study of the Place of Civic Restaurants in the Life of the Community London Council of Social Service, London.

London Council of Social Service (1947) Nutritional Problems of Invalids, the Aged and the Infirm Report of a Conference in London 18th Jan 1947. London Council of Social Service, London.

London Council of Social Service (1948) Young Workers at Meal Time. A Study in and About the London Area National Council of Social Service, London.

Lorenz, A.J. (1954) "The Conquest of Scurvey" Journal of the American Dietetic Association 30, 665 - 70.

Lowenberg, Miriam E., Todhunter, E. Neige, Wilson, Eva D., Savage, Jane R., Lubawski, James L. Food and Man John Wiley and Sons, New York.

Lowndes, John (1971) "Plimmer, Robert Henry Aders (1877 - 1955) Dictionary of National Biography 1951 - 60 E.T.Williams and Helen M.Palmer (eds), Oxford University Press, London.

Lowry, A.B. and Pearse, J. (1929) Report on Investigations in the Coalfield of South Wales and Monmouth, presented by the Minister of Health to Parliament by command of His Majesty. Cmd 3272 HMSO, London.

Lubbock, David (1963) "Origins and Early Development of FAO" in Cuthbertson (1963a).

Lusk, G. (1922) "A History of Metabolism" Endocrinology and Metabolism 3, Barker, L.F., Hoskins R.G., and Mosenthal, H.O., (eds) D.Appleton and Co., New York.

Lusk, G. (1928) The Elements of the Science of Nutrition W.B.Saunders Co, Philadelphia and London.

McCance, R.A. (1959) Reflections of a Medical Investigator Pitmann Medical Publishing Co., London.

McCance, R.A., and Lawrence, R.D. (1929) "The Carbohydrate Content of Foods" Med Res Counc Rep Ser 135, HMSO, London.

McCance, R.A., and Widdowson, E.M. (1956) Breads White and Brown. Their Place in Thought and Social History Pitman Medical Publishing Co., London.

McCarrison, R. (1936a) Nutrition and National Health (Cantor Lectures) Royal Society of Arts, London.

McCarrison, R. (1936b) "Nutrition in Health and Disease" Paper read at the Section of Nutrition at the British Medical Association Annual Conference, Oxford. British medical Journal 1936 II, 611 - 23.

McCarrison, R. (1937) Nutrition and Health British Science Guild and Messrs Headley Brothers, Ashfield, Kent.

McCleary, G.F. (1935) The Maternity and Child Welfare Movement P.S.King and Sons, London.

McCollum, E.V. (1918) The Newer Knowledge of Nutrition The Macmillan Company, New York.

McCollum, E.V. (1957) A History of Nutrition Houghton Mifflin Company, Boston.

McDonald, P., Edwards, R.A., Greenhalgh, J.F.D. (1972) Animal Nutrition Oliver and Boyd, Edinburgh.

McDowell, R.J.S. (1949) "Halliburton, William Dobson, (1860-1931)" in Dictionary of national Biography 1931-1940 L.G.Wickham (Ed) Oxford University Press, Oxford.

Macfarlane, G. (1979) Howard Florey - The making of a Great Scientist Oxford University Press.

McGucken, W. (1978) "On Freedom and Planning in Science: The Society for Freedom in Science 1940 - 46" Minerva XVI (1) 42 - 72.

McGucken, W. (1978) "The Central Organisation of Scientific and Technical Advice in the United Kingdom During the Second World War" Minerva XVII (1) 33 - 69.

McKarness, R. (1958) Eat Fat and Grow Slim Harvill Press, London.

MacKay, H.M. (1931) "Nutritional Anaemia in Pregnancy with Specific Reference to Iron Deficiency" Med Res Counc Spec Rep Ser 57, HMSO, London.

MacKay, H.M. (1920) "Observations on Cases of Rickets in an out-patient department" British Medical Journal 1920 II, 929.

MacKenzie, Donald (1977) The development of statistical theory in Britain, 1865 - 1925 : a historical and sociological perspective. PhD Thesis, University of Edinburgh.

MacKenzie, Donald (1977) "Karl Pearson and the Professional Middle Class" Annals of Science 36 125 - 43.

MacKenzie, Donald (1981) Statistics in Britain, 1865 - 1930: The social construction of scientific knowledge Edinburgh University Press, Edinburgh.

McKenzie, J.C. (1964) "Food Trends: The Dynamics of Accomplished Change" in Yudkin and McKenzie (1964) 265 - 45.

McKenzie, J.C. (1965a) "An Evaluation of Popular Nutritional Knowledge" Chemistry and Industry 4, 152.

McKenzie, J.C. (1965b) "Recent Advances in Social Science Related to Nutrition and Dietetics" Proceedings of the 4th International Congress of Dietetics, 38.

McKenzie, J.C. (1965c) "Popular Nutritional Knowledge and its Influence on Food Choice" J Inst Hlth Educ 3, 19.

MacLeod, Kay (1975) Politics, Professionalisation and the Organisation of Scientists: The Association of Scientific Workers 1917 - 1942 PhD Thesis, University of Sussex.

MacLeod, R.M. and Andrews, K. (1969) "The Committee of Civil Research: Scientific Advice for Economic Development" Minerva 7, 23 - 48.

MacLeod, R.M. and Andrews, K. (1970) "Origins of the DSIR" Public Administration 48, 23 - 48.

Macpherson, W.G., Horrocks, W.H., and Beveridge, W.W.O. (1923) History of the Great War based on official documents. Medical Services; Hygiene of the War Volume II. HMSO, London.

Magee, H.E. (1946) "Application of Nutrition to Public Health. Some Lessons of the War". British Medical Journal 1, 475 - 81.

Mannheim, Karl (1940) Ideology and Utopia. An Introduction to the Sociology of Knowledge. Kegan Paul, Trench, Trubner & Co., Ltd.

Mannheim, Karl (1952) Essays on the Sociology of Knowledge. (Edited by Paul Kecskemeti) Routledge & Kegan Paul Ltd, London.

Mannheim, Karl (1953) Essays on Sociology and Social Psychology. (Edited by Paul Kecskemeti) Routledge & Kegan Paul Ltd, London.

Marrack, J.R. (1941) Nutrition and Planning Victor Gollanz, London.

Marsh, N. (1986) The History of Queen Elizabeth College King's College London.

Marshall, F.H.A. (1949) "Schafer, Sir Edward Albert Sharpey (1850-1935)" in Dictionary of National Biography 1931-1940 L.G.Wickham (Ed) Oxford University Press, Oxford.

Marwick, A. (1964) "Middle Opinion in the 1930s: Planning Progress and Political Agreement" English Historical Review 79 287.

Massoudi, M. and Miller, D.S. (1977) "Ephedrine, a thermogenic and potential slimming drug" Proceedings of the Nutrition Society 36, 135A.

Maynard L.A. (1969) "Francis Gano Benedict - a biographical sketch, 1870-1957) J. Nut 98, 1 - 8.

Medical Research Committee (1915, 16, 17, 18) Annual Reports 1914 - 15, 1915 - 16, 1916 - 17, 1917 - 18. HMSO, London.

Medical Research Committee (1919a) Some Facts Concerning Nutrition for the Guidance of those Engaged in the Administration of Food Relief to Famine-stricken Districts (Memo by F.G.Hopkins and H.Chick, Accessory Food Factors Committee of the Medical Research Committee and the Lister Institute.) HMSO, London.

Medical Research Committee (1919b) Report on the Present State of Knowledge concerning Accessory Food Factors (Vitamines) HMSO, London.

Medical Research Council (1921 - 1939) Annual Reports for 1920 - 38. HMSO, London.

Medical Research Council (1947) Report for 1939 - 45. HMSO, London.

Medical Research Council (1949) Report for 1945 - 48 HMSO, London.

Medical Research Council (1951a) Report for 1948 - 50 HMSO, London.

Medical Research Council (1951b) "Studies of Undernutrition, Wuppertal 1946 - 9" by Members of the Department of Experimental Medicine, Cambridge, and Associated Workers. Med Res Counc Spec Rep Ser 275, HMSO, London.

Medical Research Council (1953) Report for 1951 - 52 HMSO, London.

Medical Research Council (1955) Report for 1953 - 54 HMSO, London.

Medical Research Council (1957) Report for 1955 - 56 HMSO, London.

Mellanby, E. (1908) "Creatine and Creatinine" Journal of Physiology (London) 36, 446 - 87.

Mellanby, E. (1918a) "The Part Played by an "Accessory Factor" in the Production of Experimental Rickets" Journal of Physiology (London) 52, 11P.

Mellanby, E. (1918b) "A Further Demonstration of the Part Played by an Accessory Food Factors in the Aitiology of Rickets" Journal of Physiology (London) 52, 11P.

Mellanby, E. (1919a) "Alcohol: Its absorption into and Disappearance from the Blood under Different Conditions" Med Res Counc Spec Rep Ser 31, HMSO, London.

Mellanby, E. (1919b) "An Experimental Investigation on Rickets" The Lancet 1919 I, 407.

Mellanby, E. (1920a) "Discussion on the Importance of Accessory Food Factors (Vitamins) in the Feeding of Infants" Proceedings of the Royal Society of Medicine 13 Section for the Study of the Diseases of Medicine, 57.

Mellanby, E. (1920b) "Accessory Food Factors (Vitamins) in

- the Feeding of Rickets" The Lancet 1920 I, 856.
- Mellanby, E. (1921) "Experimental Rickets" Med Res Counc Spec Rep Ser 61, HMSO, London.
- Mellanby, E. (1922a) "Some Common Defects of Diet and their Pathological Significance." (Oliver-Sharpey Lectures) British Medical Journal 1922 I, 790, 831.
- Mellanby, E. (1922b) "Discussion on the Etiology of Rickets. Opening Paper II" British Medical Journal 1922 II, 849 - 53.
- Mellanby, E. (1924) "Deficiency Diseases with Special References to Rickets" British Medical Journal 1924 I, 895.
- Mellanby, E. (1925a) "Experimental Rickets. The Effects of Cereals and their Interaction with other factors of Diet and Environment in Producing Rickets" Med Res Counc Spec Rep Ser 93 HMSO, London.
- Mellanby, E. (1925b) "Diet and Disease; With Special Reference to Teeth" Am Dental Surg 46, 620.
- Mellanby, E. (1926) "Diet and Disease; With Special Reference to Teeth, Lungs, and Pre-natal Feeding" British Medical Journal 1926 I, 515.
- Mellanby, E. (1927) "Duties of the State in Relation to the Nation's Food Supply" British Medical Journal 1927 II, 633 - 6.
- Mellanby, E. (1928) "A Rat Technique for Demonstrating the Interfering Effect of Cereals on Bone Calcification" Biochemical Journal (London) 22, 102.
- Mellanby, E. (1930) "A Lecture on the Relation of Diet to Health and Disease; Some Recent Investigations." British Medical Journal 1930 I, 667.
- Mellanby, E. (1931) "Diet and Health" (Hastings Lecture) British Medical Journal Supplement, 85.
- Mellanby, E. (1933a) "Nutrition and Child-Bearing" [Lloyd Roberts Lecture] The Lancet 1933 II, 1131 - 7.
- Mellanby, E. (1933b) "The Fat-Soluble Vitamins - Their Significance in Nutrition." Edinburgh Medical Journal 40, 197.
- Mellanby, E. (1934) Nutrition and Disease. The Inter-action of Clinical and Experimental Work Oliver and Boyd, Edinburgh, and London.
- Mellanby, E. (1938) "The State and Medical Research" (Harveian Oration) British Medical Journal 1938 II, 821.

Mellanby, E. (1939) Recent Advances in Medical Science. A Study of their Social and Economic Implications (Rede Lecture 1939) Cambridge University Press, London.

Mellanby, E. (1946) "Diet and Canine Hysteria" British Medical Journal 2, 886 - 7.

Mellanby, E. (1947) "Further Observations on the Production of Canine Hysteria by flour treated with Nitrogen Trichloride. (Agene Process)" British Medical Journal 1947 II, 288.

Mellanby, E. (1950) A Story of Nutritional Research. The Effect of Some Dietary Factors on Bones and the Nervous System (Abraham Flexnor Lectures Ser No 9.) Williams and Wilkins Co, Baltimore, Md.

Mellanby, E. (1951) "The Chemical Manipulation of Food (Sanderson-Wells Lecture)" British Medical Journal 1951 II, 863 - 9.

Mellanby, E. and Mellanby, M. (1921) "The experimental Production of Thyroid Hyperplasia in Dogs." Journal of Physiology (London) 55, 7P.

Mellanby, E. and Green, H.N. (1928) "Vitamin A as an Anti-infective Agent" British Medical Journal 1928 II, 691.

Mellanby, E. and Green, H.N. (1929) "Vitamin A as an Anti-infective Agent: Its Use in the Treatment of Puerperal Septicaemia; Preliminary Communication." British Medical Journal 1929 I, 984.

Mellanby, E. and Green, H.N. (1930) "Carotene and Vitamin A: the Anti-infective action of Carotene." Brit J Exp Pathol 11, 81.

Mellanby, E. Green, H.N., Pindar, D., and Davis, G. (1931) "Diet as a Prophylactic Agent Against Puerperal Sepsis; With Special Reference to Vitamin A as an Anti-infective Agent" British Medical Journal 1931 II, 595.

Mellanby, M. (1929) "Diet and Teeth. An Experimental Study Part I" Med Res Counc Spec Rep Ser 140 HMSO, London.

Mellanby, M. (1930) "Diet and Teeth. An Experimental Study Part II" Med Res Counc Spec Rep Ser 153 HMSO, London.

M'Gonigle, G.C.M. (1933) "Poverty, Nutrition and Public Health. (An Investigation into some of the Results of Moving a Slum Population into Modern Dwellings.) Proceedings of the Royal Society of Medicine. Section of Epidemiology and State Medicine xxxvi (1), 367 - 87.

M'Gonigle, G.C.M., and Kirby, J. (1936) Poverty and Public

Health Victor Gollanz, London.

Miles, A. (1966) "The Lister Institute of Preventative Medicine 1861 - 1966." Nature 212, 559 - 62.

Miles, Eustace (1909) Better Food for Boys (2nd Edition) George Bell & Sons, London.

Miles, Eustace (1921) Through the Day. How workers can easily increase their health, efficiency and happiness, without expense and without conspicuousness, by simple little changes in the different parts of their daily life. London and Norwich Press, London.

Miller, D.S., Baker, J., Bowden, M., Evans, E., Holt, J., McKeay, R.J., Meinertzhagen, I., Mumford, P.M., Oddy, D.J., Rivers, J.P.W., Sevenhuysen, G., Stock, M.J., Watts, M., Kebede, A., Wolde-Gabriel, Y. and Z. (1976) "The Ethiopian Applied Nutrition Project" Proc Roy Soc B 194 23 - 48.

Miller, Ellice (1975) Century of Change The Queen's College, Glasgow.

Ministry of Food (1946) How Britain was Fed in Wartime HMSO, London.

Ministry of Health (1920 - 35) On the State of Public Health, Report of the Chief Medical Officer of the Ministry of Health (Sir George Newman) 1919 - 34., HMSO, London.

Ministry of Health (1924) Final Report of the Departmental Committee on the Use of Preservatives and Colouring Matters in Food HMSO, London.

Ministry of Health (1927) Report of the Departmental Committee on the Treatment of Flour with Chemical Substances HMSO, London.

Ministry of Health (1930) Statutory Rules and Orders 1930 No 185 Poor Law England. The Public Assistance Order 1930. To come into operation on the 1st April 1930. HMSO, London.

Ministry of Health (1932a) Advisory Committee on Nutrition Report to the Minister of Health on Diets in Poor Law Childrens' Homes, 30th Nov 1931. HMSO, London.

Ministry of Health (1932b) Advisory Committee on Nutrition Report to the Minister of Health on the Criticism and Improvement of Diets 5th Dec 1931. HMSO, London.

Ministry of Health (1932c) Certain recommendations of the Advisory Committee on Nutrition. To County and County Borough Councils, and other Maternity and Child Welfare Authorities, Oct 27, 1932. (Circular 1290), HMSO, London.

Ministry of Health (1934a) Nutrition. To County Councils

and Sanitary Authorities in England and Wales Circular 1370, 4/1/34, HMSO, London.

Ministry of Health (1934b) Report of Conference between the Representatives of the Advisory Committee on Nutrition and Representatives of the British Medical Association, May 1934 (Circulated with Circular 1406 Nutrition 15/5/34) HMSO, London.

Ministry of Health (1934c) Nutrition Circular 1406, 15/5/34, to County Councils and Sanitary Authorities in England and Wales. HMSO, London.

Ministry of Health (1936) The Nutritive Value of Milk. Memorandum by the Advisory Committee on Nutrition of the Ministry of Health and the Department of Health for Scotland HMSO, London.

Ministry of Health (1937) First Report of the Advisory Committee on Nutrition 5/3/37 HMSO, London.

Ministry of Health (1946) On the State of Public Health During the Six Years of War HMSO, London.

Moore, D. Fitzgerald (1942) Letter on the proposed "Nutrition Council" The Times, 15/9/42.

Moore, J.H. and Rook, J.A.F. (1978) The Hannah Research Institute 1928 - 1978 Hannah Research Institute, Ayr.

Moore, T. (1965) "Forty Years of Nutrition Research" Royal Society of Health Journal 85 (4).

Morton, R.A. (1969) The Biochemical Society, its history and activities 1911 - 69. The Biochemical Society, London.

Morton, R.A. (1972) "Biochemistry at Liverpool 1902 - 71" Medical history 16, 321 - 53.

Mottram, V.H. (1925), (1931) Food and the Family Nisbet and Co. Ltd., London.

Mottram, V.H. (1926) The Functions of the Body Nisbet and Co. Ltd., London.

Mottram, V.H. (1927) "The Physiological Basis of the Minimum Wage" (introducing a conference on Family Endowment) The Lancet 1927 II, 898 - 9.

Mottram, V.H. (1960) The Physical Basis of Personality Penguin, London. (First published 1944)

Mottram, V.H., and Mottram, E.C. (1932) Sound Catering for Hard Times Nisbet and Co. Ltd., London.

Mowat, C.L. (1961) The Charity Organisation Society 1869 -

1913. Its Ideas and Work. Methuen and Co Ltd., London.

Mummery, J.H. (1922) "Reports of the Committee for the Investigation of the Causes of Dental Disease I. The Structure of Teeth in Relation to Dental Disease" Med Res Counc Rep Ser 97, HMSO, London.

Naismith, D.J. (1974) "Maternal and Infantile Obesity - A Common Aetiology?" in Getting the Most out of Food 9 Van den Bergh & Jurgens Ltd., 45 - 68.

Naismith, D.J. (1980) "Maternal nutrition and the outcome of pregnancy - a critical appraisal" Proceedings of the Nutrition Society 39, 1 - 11.

National Academy of Science - National Research Council (1955) Scientific and Technical Societies of the US and Canada Sixth Edition.

Nature (1933) "Walter Fletcher" (Obituary) Nature CXXII 17 - 20.

Needham, D. (1948 - 9) "Chemical Aspects of Muscular Contraction" British Journal of Nutrition 2 (1948 - 9), 256 - 60.

Needham, J and Baldwin, E. (eds.) (1949) Hopkins and Biochemistry 1861 - 1947 W.Heffer and Sons Ltd., Cambridge.

New Fabian Research Bureau (1936) Nutrition New Fabian Research Bureau, London. .

Newman, G. (1906) Infant Mortality. A Social Problem Methuen and Co., London.

Newman, G. (1919) An Outline of the Practice of Preventative Medicine Cmd 363 HMSO, London.

Newman, G. (1920) Public Opinion in Preventative Medicine HMSO, London.

Newman, G. (1924) Public Education in Health HMSO, London.

Newman, G. (1925) Public Education in Health HMSO, London.

Newman, G. (1926) An Outline of the Practice of Preventative Medicine HMSO, London.

Newman, G. (1928) The Foundations of National Health (The Sir Charles Hastings Lecture) HMSO, London.

Newman, G. (1939) The Building of a Nation's Health, MacMillan and Co Ltd., London.

Naismith, D.J. (1974) "Maternal and Infantile obesity - A

Common Aetiology?" in Getting the Most out of Food 9 Van den Berghs & Jurgens Ltd., London.

National Council for Children's Welfare (1968) A Tribute to Simon Yudkin National Council for Children's Welfare, London.

Nyrop, J.E. (1954) "Hardened Fats and Lung Cancer" (letter) The Lancet 1954 2, 1288.

Ogilvie, Hector (1960) "White Mouse Medicine" Family Doctor October, 642 - 3.

Orr, J.B. (1922) Contribution to the discussion on the aetiology of rickets. British Medical Journal 1922 II, 857.

Orr, J.B. (1924) "The importance of Mineral Elements in the Maintenance of Health" British Medical Journal 1924 II, 504.

Orr, J.B. (1928) "Milk consumption and the growth of school children." The Lancet 1928 I, 202.

Orr, J.B. (1931) "Iodine supply and the incidence of endemic goitre" Med Res Counc Spec Rep Ser 154 HMSO, London.

Orr, J.B. (1934) The National Food Supply and its Influence on Public Health. Chadwick Lecture. P.S.King and Sons, London.

Orr, J.B. (1936) Food, Health and Income. A report on a survey of adequacy of diet in relation to income. Macmillan and Co., Ltd., London.

Orr, J.B. (1939) "The physiological and economic bases of Nutrition. Harben Lectures." J. R. Inst. Public Health & Hygiene 2 661; 3, 9, 37.

Orr, J.B. (1940) Nutrition in War Tract Series No 251. Fabian Society, London.

Orr, J.B. (1942) Fighting for What? Macmillan and Co., Ltd., London.

Orr, J.B. (1943) Food and the People. Target for Tomorrow No III. Pilot Press., London.

Orr, J.B. (1944a). Letter to the Nutrition Society meeting on "Problems of Collective Feeding", 30/5/42. Proceedings of the Nutrition Society (1944) 1 (1), 84.

Orr, J.B. (1944b) Contribution to the discussion on the Hot Springs Conference. Proceedings of the Nutrition Society 2 (3 & 4), 171 - 2.

Orr, J.B. (1958) "Walter Elliot" Biographical Memoirs of Fellows of the Royal Society 4, 73 - 80.

Orr, J.B. (1963) "History of the Rowett Research Institute, 1913-1945" in Cuthbertson (1963a) 1 - 16.

Orr, J.B. (1966) As I Recall MacGibbon and Kee, London.

Orr, J.B. and Cathcart, E.P. (1914a) "The influence of carbohydrate and fat on protein metabolism. 3. The effect of sodium selenite." Journal of Physiology 48, 113.

Orr, J.B. and Cathcart, E.P. (1914b) "The influence of acetoacetic acid on the estimation of creatinine" Journal of Physiology 48, xxi.

Orr, J.B. and Kinloch, J.P. (1921) "Note on the influence of diet on the energy expenditure in work." J. Roy. Army Med. Corps. 36, 81.

Orr, J.B. and Magee, H.E. (1924) "Studies in the metabolism of the ruminant by indirect calorimetry 5. The course of metabolism after food in the goat." J. Agric Science 14, 619.

Orr, J.B. and Leitch, I. (1929) "Iodine in Nutrition" Medical Research Council Special Report Series 123 HMSO, London.

Orr, J.B. and Clark, M.L. (1930) "A dietary survey of six hundred and seven Scottish families in seven cities and towns in Scotland." The Lancet 1930 II, 594.

Orr, J.B. and Gilks, J.L. (1931) "Studies of Nutrition. The physique and health of two African Tribes" Medical Research Council Special Report Series 155 HMSO, London.

Orr, J.B. and Lubbock, D. (1940) Feeding the People in War-time Macmillan and Co., Ltd., London.

Orwin, C.S. (1959) "Hall, Sir Alfred Daniel, (1864-1942)" in Wickham, L.G., and Williams, E.T. (Eds) Dictionary of National Biography Oxford University Press.

Paton, D.N. (1894a) "On Hepatic Glycogenesis" Philosophical Transactions 185, 233 - 77.

Paton, D.N. (1894b) "The Physiology of the Carbohydrates - our present knowledge of their Relations to the Animal Economy" Edinburgh Medical Journal 40 481 - 96.

Paton, D.N. (1897) "A further study of hepatic glycogenesis" Journal of Physiology (London) 22, 121 - 36.

Paton, D.N. (1898) Life History of the Salmon in Fresh Water Scottish Fisheries Board.

Paton, D.N. (1899a) "Letter of Application with Testimonials from Diamid Noel Paton... Candidate for the Chair of Physiology in the University of Edinburgh", March 1899. National Library of Scotland, George IV Bridge, Edinburgh. Shelf Mark 5,120(1).

Paton, D.N. (1899b) "Some observations on the mode of glycogen to glucose in the liver" Journal of Physiology (London) 24, 36 - 41.

Paton, D.N. (1908) A Practical Course of General Physiology for Medical Students James Maclehose and Sons, Glasgow.

Paton, D.N. (1910) "Creatin excretion in the bird and its significance" Journal of Physiology (London) 39, 485.

Paton, D.N. (1913) The Nervous and Chemical Regulators of Metabolism MacMillan and Co Ltd., London.

Paton, D.N. (1914) Essentials of Human Physiology for Medical Students William Green and Sons, Edinburgh.

Paton, D.N. (1920) "Discussion of the importance of Accessory Food Factors (Vitamines) in the Feeding of Infants" Proc Roy Soc Med 13 (1 & 2) Sect Stud Dis Children 77 - 86.

Paton, D.N. (1922) "Discussion on the Etiology of Rickets. Contribution." British Medical Journal 1922 II, 85 - 5.

Paton, D.N. (1926a) The Physiology of the Continuity of Life Macmillan and Co., Ltd., London.

Paton, D.N. (1926b) "The Late Professor Emeritus John Gray McKendrick" Edinburgh Medical Journal XXXIII (III), 176 - 7.

Paton, D.N. (1926c) "The Relationship of the Thymus and Testes to Growth" Edinburgh Medical Journal 1926, 351 - 6.

Paton, D.N. (1927) "The Relationship of Science and Medicine" Inaugural Address to the Royal Medical Society of Edinburgh 14/11/27. Edinburgh Medical Journal Jan 1928 XXXV 1 - 11.

Paton, D.N., Dunlop, J.C., and Inglis, E. (1900) A study of the diet of the labouring classes in Edinburgh carried out under the auspices of the town council of Edinburgh Otto Schulze and Co., Edinburgh. Also Incorporated into Vol 8 (1903) of the Laboratory Reports of Royal College Physicians of Edinburgh.

Paton, D.N. and Mackie, W.C. (1912) "The liver in relation to creatine metabolism in the bird" Journal of Physiology 45, 115 - 8.

Paton, D.N., Findlay, L., Watson, A., Burns, D., Sharpe, J.S., Wishart, G.M. (1916) "The Parathyroids: Tetania Parathyreopriva: Its Nature, Cause, and Relations to Ideopathic Tetany" (eight papers) British Journal of Experimental Physiology 10, 103 - 382.

Paton, D.N., Findlay, L. and Watson, A. (1918) "Observations on the Cause of Rickets" British Medical Journal 1918 II, 625.

Paton, D.N. and Findlay, L. (1918) "General Considerations" in Ferguson (1918), 97 - 9.

Paton, D.N., and Watson, A. (1921a) "The Aetiology of Rickets: An Experimental Investigation" British Journal of Experimental Pathology II, 75 - 85.

Paton, D.N., and Watson, A. (1921b) "The Etiology of Rickets: An Experimental Investigation." British Medical Journal 1921 I, 594.

Paton, D.N. and Findlay, L. (1926) "Child Life Investigations. Poverty Nutrition and Growth. Studies of Child Life in Cities and Rural Districts in Scotland". Med Res Counc Spec Rep Ser 101 HMSO London.

Pavy, F.W. (1894) "The Physiology of the Carbohydrates, their Application as Food and Relationship to Diabetes" J & A Churchill, London.

Pavy, F.W. (1895) The Physiology of the Carbohydrates. An Epicriticism J.A.Churchill, London.

People's League of Health (1926) The Importance of Diet in Relation to Health George Routledge & Sons Ltd., London.

Peters, R. (1958) "John Beresford Leathes" Biographical Memoirs of Fellows of the Royal Society 4, 158 - 92.

Petty, Celia (1985) Medical Research and its Organisation in the Interwar Years The Medical Research Council's Interwar Dietary Surveys. Paper read at "Science in modern Medicine" conference, Manchester April 1985. Author's address: Wellcome Unit for the History of medicine, Oxford, and London School of Hygiene. A summary of this paper may be found in the Newletter of the Society for the Social History of Medicine.

Pirquet, Clemens von (1922) An outline of the Pirquet Feeding System W.B.Saunders Co., Philadelphia.

Platt, B.S. (1944) "Aspects of Nutrition Research" British Medical Bulletin 2, 204 - 7.

Platt, B.S. (1946) "The Colonial Nutrition Problem"

Proceedings of the Nutrition Society 5 (1 & 2), 2 - 15.

Platt, B.S. (1955) "Human Nutrition and the Sophistication of Foods and Feeding Habits. Some Observations, Implications and Speculations". British Medical Journal 1955 I, 179 - 85.

Platt, B.S. (1956) "Sir Edward Mellanby, GBE, KCB, MD, FRCP, FRS (1884-1955): The Man, Research Worker and Statesman" Annual Review of Biochemistry 1956, 1 - 28.

Political and Economic Planning (1936) "The Malnutrition Controversy" in Planning 88 (Dec 36) 4 - 15.

Porter, Langley (1951) "Robert Hutchison at the London Hospital Circa 1900: Reminiscences of a Clinical Clerk" Archives of the Diseases of Childhood 26, 369 - 72.

Radford, D. (1976) Dietary Fats and Coronary Heart Disease. A Case Study of the Genesis and Management of Uncertainty in Science PhD thesis, Victoria University of Manchester.

Rathbone, E. (1924) The Disinherited Family, a Plea for Family Endowment Edward Arnold & Co, London.

Rathbone, E. (1940) The Care of Family Allowances (Penguin Special) Penguin Books, Harmondsworth.

Renton, J.M. and Robertson, M.E. (1916) "Thymusectomy and its Relationship to Rickets" J of Pathol and Bacteriol 21, 1 - 11.

Richards, A.I. (1932) Hunger and Work in a Savage Tribe. A Functional Study of Nutrition among the Southern Bantu George Routledge & Sons Ltd., London.

Richards, A.I. (1939) Land, Labour and Diet in Northern Rhodesia. An Economic Study of the Bemba Tribe. Published for the International Institute of African Languages and Cultures by the Oxford University Press, London.

Richards, A.I. (1946) "Sociological factors" Proceedings of the Nutrition Society 5 (1 & 2) 28 - 34.

Richie, J (1953) History of the Laboratory of the Royal College of Physicians of Edinburgh. Royal College of Physicians of Edinburgh, Edinburgh.

Rivers, J.P.W., (1975) "Between combine harvester and ribosome" Nature 253 80 - 1.

Rivers, J.P.W., (1979) "The profession of nutrition - an historical perspective" Proceedings of the Nutrition Society 38, 225 - 31.

Roll, Eric (1956) The Combined Food Board. A study in

Wartime International Planning Stanford University Press, Stanford, California.

Rook, J.A.F. (1978) The Hannah Research Institute 1928 to 1978 in Moore and Rook (1978), 3 - 10.

Rose, Hilary and Rose, Steven (1969) Science and Society Allen Lane, The Penguin Press, London.

Rosenstern, I. (1957) "Heinrich Finklestein (1865 - 1942) in Veeder, (1957), 104 - 8.

Royal Society (1917) The Food Supply of the United Kingdom. A Report Drawn up by a Committee of the Royal Society at the Request of the President of the Board of Trade. HMSO, London.

Royal Society Food (War) Committee (1919) Report on the Food Requirements of Man and their Variations according to Age, Sex, Size and Occupation. Harrison and Sons, London.

Russell, C.A., Coley, N.G., and Roberts, G.K. (1977) Chemists by Profession. The Origins and Rise of the Royal Institute of Chemistry The Open University Press, London.

Sadler, Judy (1978) "Ideologies of 'Art' and 'Science' in Medicine. The Transition from Medical Care to the Application of Technique in the British Medical Profession" in Krohn, W., Layton, E.T., and Weingart, P. (eds) The Dynamics of Science and Technology. Sociology of the Sciences Yearbook II D.Reidel Publishing Co., Dordrecht, Boston, 117 - 215.

Schick, B. (1957) "Paediatrics in Vienna at the Beginning of the Twentieth Century" in Veeder (1957), 247 - 57.

Schiff, E. (1957) "Adalbert Czerny (1863 - 1941) in Veeder (1957), 85 - 93.

The Scotsman (1986) "Crunch for crisp expert" inset in "BMA condemns lack of action on unhealthy diet" The Scotsman 11/3/86, 3.

Scottish Medical Journal (1959) "Sir Robert Muir" (Obituary) Scottish Medical Journal 4, 210 - 1.

Scottish Medical Journal (1961) "A.P.Meiklejohn" (Obituary) Scottish Medical Journal 6, 336.

Scottish National Development Council (1934a) Scotland Issue 1 of Scottish National Development Council Journal, (Spring 1934), Scottish National Development Council, Edinburgh.

Scottish National Development Council (1934b) "Report of the Committee on Agriculture" Economic Series 7 Scottish

National Development Council, Glasgow.

Shardlow, D.J. (1977) Nutrition and Social Reform in the Nineteen Thirties MSc Thesis University of Sussex.

Sharpey-Schafer, E. (1927) "History of the Physiological Society 1876 - 1926" Journal of Physiology (London) Supplement.

Sheldon, Wilfred (1957) "G.F.Still" in Veeder (1957), 126 - 30.

Shils, E. (1947) "A Critique of Planning: The Society for Freedom in Science." Bulletin of the Atomic Scientists III March 1947 80 - 2.

Sillitoe, H. (1933) A History of the Teaching of Domestic Subjects Methuen, London.

Sinclair, H.M. (1944) Contribution to discussion on "Evaluation of Nutritional Status" Proceedings of the Nutrition Society 1 (1 & 2), 9 - 10.

Sinclair, H.M. (1942) Letter on the proposed "Nutrition Council", The Times 3/9/42.

Sinclair, H.M. (1953) (ed) The Work of Sir Robert McCarrison Faber and Faber, London.

Sinclair (1956) "Deficiency of Essential Fatty Acids and Atherosclerosis etc." The Lancet 1956 I, 381 - 3.

Sinclair, H.M. (1958) "Banting up to date" The Lancet 1958 II, 1065 - 6.

Sinclair, H.M. (1960) "White Mouse Medicine" British Medical Journal 1960 II, 1520 - 1.

Sinclair, H.M., and Hollingsworth, D.F. (1969) Hutchison's Food and the Principles of Nutrition Edward Arnold, London.

Slater, W.K. and Edwards, J. (1965) "John Hammond (1889-1964)" Biographical Memoirs of Fellows of the Royal Society 1965, 101 - 13.

Smith, J.A.B. (1978) A Brief History of the Hannah Research Institute The Hannah Institute, Ayr.

Sofer, C., Janis I., and Wishlade, L. (1964) "Social and Psychological Factors in Changing Food Habits." in Yudkin and McKenzie (1964), 90 - 108.

Standing Joint Committee of Industrial Women's Organisations (1936) Report on Nutrition and Food Supplies Presented to the National Conference of Labour Women, Swansea, May 1936. (Mentioned in Committee Against

Starling, E.H. (1919a) The Oliver-Sharpey Lectures on the Feeding of Nations. A Study in Applied Physiology Longmans Green and Co., London.

Starling, E.H. (1919b) "The Feeding of Nations: A Study in Applied Physiology" (Abstract) British Medical Journal 1919 I, 757 - 8.

Stephenson, M. (1948) "Obituary Notice Frederick Gowland Hopkins, 1861 - 1947" Biochemical Journal 42, 161 - 9.

Stephenson, M. (1949) "Sir F.G.Hopkins's Teaching and Scientific Influence" in Needham and Baldwin (1949), 29 - 38.

Stiebeling, H.K. (1933) "Food budget for nutrition and production programs" U.S. Dept Agric Misc Pub 183.

Stocks, M.D. (1949) Eleanor Rathbone, A Biography Victor Gollancz Ltd., London.

Swash, M., and Mason, S. (1984) Hutchison's Clinical methods (18th Edition) Balliere Tindall, London.

Tallerman, K.H. and Maitland-Jones, A.G. (1951) "Sir Robert Hutchison" Archives of Diseases of Childhood 26 365 - 7.

Tanner, W.E. (1946) Sir W.Arbutnot Lane Bart CB, MS, FRCS. His Life and Work. Bailliere, Tindall and Cox, London.

Thomson, A.M. (1963) "Reproduction and Diet" in Cuthbertson (1963) 329 - 37.

Thomson, A.M. (1982) "Isabella Leitch 1890-1980" (obituary notice) British Journal of Nutrition 45, 1 - 4.

Thomson, A.M. (1978) "Problems and politics in nutritional surveillance" Proceedings of the Nutrition Society 37, 317 - 32.

Thomson, A. Lansborough (1973, 1975) Half a Century of Medical Research. Volume One: Origins and Policy of the Medical Research Council (UK), Volume Two: The Programme of the Medical Research Council (UK). HMSO, London.

The Times (1968) "Simon Yudkin" (Obituary) The Times 17/4/68.

Todhunter, E.N. (1961) "Some Classics of Nutrition and Dietetics" Journal of the American Dietetic Association 44, 100 - 8.

Todhunter, E.N. (1965) "Evolution of nutrition concepts, perspectives and new horizons" Journal of the American

Dietetic Association 46, 120 - 8.

Todhunter, E.N. (1972) "Iron, blood and nutrition" Journal of the American Dietetic Association 61, 122 - 6.

Todhunter, E.N. (1973) "Some Aspects of the History of Dietetics" World Review of Nutrition and Dietetics 18, 1 - 46.

Trueman, A.E. (1943) "Science and the Future" British Way Series 7 The University Press, Glasgow.

Truswell, A.S. (1972) Human Nutritional problems at Four Stages of Technical Development (Inaugural Lecture) Queen Elizabeth College, London.

Tuxford, A.W. (1939) "The estimation of physique and nutrition in children" Journal of Hygiene 39, 203 - 16.

Twigg, J. (1981) The Vegetarian Movement in England 1847 - 1941 with particular reference to its ideology PhD thesis, London School of Economics, London University.

United Nations (1943) Final Act of the United Nations Conference on Food and Agriculture at Hot Springs, Virginia, USA 18th May - 3rd June, 1943 HMSO, London.

United Nations Information Organisation (1945) Towards a World of Plenty. The Story of the Food and Agricultural Organisation of the United Nations HMSO, London.

Veeder, B.S. (ed) (1957) Paediatric Profiles C.V.Mosby Company, St Louis.

Wall, John (1981) "Lloyd, Edward Mayow Hastings (1889-1968)" in Williams, E.Y., and Nicholls, C.S. (eds) Dictionary of National Biography 1961-70 Oxford University Press.

Wallis, R. (ed) On the Margins of Science: the Social Construction of Rejected Knowledge. (Sociological Review Monograph 27) University of Keele, Keele.

Wang, Y.L. and Yudkin, J. (1939) "Assessment of the Level of Nutrition. Urinary Excretion of Aneurin at Varying Levels of Intake." Chemistry and Industry 58, 1088.

Watson, Douglas Chalmers (1910) Food and Feeding in Health and Disease. A Manual of Practical Dietetics Oliver and Boyd, Edinburgh.

Watson, F. (1951) Dawson of Penn Chatto and Windus, London.

Watson, R.H.J. (1964) "Modification of the effects of drugs on behaviour by the nutritional state" Animal Behaviour and Drug Action Ciba Foundation Symposium, 249.

- Watson, R.H.J. (1966) "Carbohydrate preferences in rats under two conditions of husbandry" Proceedings of the Nutrition Society 25, xiii.
- Webster, Charles (1982) "Healthy or Hungry Thirties?" History Workshop No. 13 April 1982, 110 - 29.
- Weekend Review (1933) "Hungry England Inquiry: Report of Committee" Weekend Review 1/4/33, 357 - 60.
- Werskey, Gary (1978) The Visible College Allen Lane, London.
- Werskey, Gary (1971) "British Scientists and 'Outsider' Politics, 1931-45" Science Studies I, 67 - 83.
- Widdowson, E.M. (1969) "Nutrition Research in Britain" Journal of the American Dietetic Association 55, 233 - 8.
- Widdowson, E.M. and McCance, R.A. (1954) "Studies on the Nutritive Value of Bread and on the Effect of Variation in the Extraction Rate of Flour on the Growth of Undernourished Children" Medical Research Council Special Report Series 287 HMSO, London.
- Willcocks, A.J. (1967) The Creation of the National Health Service Routledge & Kegan Paul, London.
- Wilson, C. (1942) Letter on the proposed "Nutrition Council" The Times 21/9/42.
- Wilson, Norman (1946) Municipal Health Services Allen and Unwin, London.
- Witts, L.J. (1971) "Horder, Thomas Jeeves" in E.T.Williams and H.M.Palmer (eds) Dictionary of National Biography 1951 - 60. Oxford University Press, London.
- Wishart, G.M. (1954) "Edward Provan Cathcart, 1877-1954." Obituary Notices of Fellows of the Royal Society 9 35 - 53.
- Women's Labour Party (1936) "Expenditure in Working Class Households" - An appendix to Standing Joint Committee of Industrial Women's Organisations (1936).
- Wood, Neal (1959) Communism and British Intellectuals Victor Gollancz, London.
- World Health Organisation (1965) WHO Activities in Nutrition 1948 - 1964. World Health Organisation, Geneva.
- Wynne, B.E. (1977) C.G.Barkla and the J Phenomenon - a case study in the Sociology of Physics M.Phil Thesis, University of Edinburgh.

Wynne, B.E. (1979) "Physics and psychics: Science, symbolic action and social control in late Victorian England" in Barnes and Shapin, (eds) (1979) 167 - 86.

Wynne, B.E. (1985) "Note of Correction" History of Science Society Newsletter.

Young, F.G. (1954) "Jack Cecil Drummond 1891 - 1952" Obituary Notices of Fellows of the Royal Society 9, 99 - 129.

Yoxall, A. (1965) A History of the teaching of Domestic Economy A.T.D.S. Chivers.

Yudkin, J. (1938) "A case of Beri-beri Occuring in London". The Lancet 1938 II, 1347.

Yudkin, J. (1939) "The Nature of Alcohol Tolerance. The Metabolism of Alcohol by the Tissues of the Tolerant Rat". Chemistry and Industry 58, 1088.

Yudkin, J. (1941) "The Vitamin B1 Sparing Action of Fat and Protein. The Oxidation of Pyruvate by the Tissues of Symptom-free Rats on Diets Deficient of Vitamin B1." Chemistry and Industry 60, 220.

Yudkin (1942) "Special Article: Food and Food Values. From the Scientist to the Administrator. Nutrition as an aid to Health." The Times, 28/8/42.

Yudkin, J. (1943a) "The case for a Nutrition Council" Food Manufacture 18, 338.

Yudkin, J. (1943b) "A Vitamin-feeding Test in School-children." The Lancet 1943 II, 755.

Yudkin, J. (1944a) "The Nutritional Status of Cambridge Schoolchildren" British Medical Journal 1944 II, 201.

Yudkin, J. (1944b) "Nutrition and Family Size" The Lancet 1944 II, 384.

Yudkin, J. (1944c) Contribution to the discussion on the evaluation of nutritional status. Proceedings of the Nutrition Society 1 (1 & 2), 10.

Yudkin, J. (1947) "Some Observations on Nutrition in West Africa 27 - 30." Nutrition Dietetics and Catering Spring 1947, 27 - 30.

Yudkin, J. (1948) "Anthropometric and Performance Tests." British Journal of Nutrition 2, 158.

Yudkin, J. (1949a) "Nutritional Status of Schoolchildren" Proceedings of the First International Congress of Biochemistry.

- Yudkin, J. (1950) "Food and Mankind" British Medical Journal 1950 I, 1101.
- Yudkin, J. (1952a) "The significance of Pallor in the School-child." The Lancet 1952 I, 239.
- Yudkin, J. (1952b) "Nutrition" 127 - 36 in The British Encyclopedia of Medical Practice: Medical Progress 1952 London.
- Yudkin, J. (1952c) "Nutritional Assessment of the Individual." in Scientific basis of Medicine 1951 - 2 London.
- Yudkin, J. (1953a) "The Teaching of Nutrition" Proceedings of the Nutrition Society 12, 198.
- Yudkin, J. (1953b) "Fighting Food Faddism" in Nutrition, Dietetics, Catering 7, 186 - 90.
- Yudkin (1953c) "Vitamins in Practice" Medical World 78, 577.
- Yudkin, J. (1954) "Nutrition at Queen Elizabeth College" Queen Elizabeth College Magazine May 1954, 27 - 28.
- Yudkin, J. (1955a) "Hardened Fats and Lung Cancer" (letter) The Lancet 1955 I, 46 - 7.
- Yudkin, J. (1955b) "Hardened Fats and Lung Cancer" (letter) The Lancet 1955 I, 1025. .
- Yudkin, J. (1956a) "Man's Choice of Food" The Lancet 1956 I 645 - 9.
- Yudkin, J. (1956b) "Deficiency of Essential Fatty Acids" The Lancet 1956 I, 506.
- Yudkin, J. (1958) This Slimming Business MacGibbon & Kee, London.
- Yudkin, J. (1959) "Etiology of Cardiac Infaction" American Medical Association Archives of Internal Medicine 104, 681.
- Yudkin, J. (1960) "The Department of Nutrition, Queen Elizabeth College" Nutrition, Dietetics and Catering 14, 151.
- Yudkin, J. (1964a) "The need for Change" in Yudkin and McKenzie (1964) 15 - 24.
- Yudkin, J. (1964b) "Beware the Malnutrition of Affluence" New Scientist 21, 273.
- Yudkin, J. (1971) "Sucrose in the aetiology of coronary

thrombosis and other diseases" in Yudkin et al (1971).

Yudkin, J. (1972) Pure, White and Deadly The Problem of Sugar Davis Poynter Ltd., London.

Yudkin, J. (1974) "Note of Reservation. The role of sucrose" in "Diet and Coronary Heart Disease" Report of the Advisory Panel of the Committee on Medical Aspects of Food Policy (Nutrition) on Diet in Relation to Cardiovascular and Cerebrovascular Disease" DHSS Report on Health and social Subjects 7, HMSO, London, 34 - 5.

Yudkin, J. (1975) "Neuberger on Nutrition" Nature 253, 303.

Yudkin, J., Needham, D.M., Needham, J., and Baldwin, E, (1932) "A Comparative Study of the Phosphagens, with some Remarks on the Origin of Vertebrates." Proceedings of the Royal Society B. 110, 260.

Yudkin, J., Harris L.J., and Abbasy M.A. (1936) "Vitamins in Human Nutrition. Vitamin C Reserves of Subjects of the Voluntary Hospital Class." The Lancet 1936 I, 1488.

Yudkin, J. and Kodicek, J.H. (1942) "Slit-lamp Microscope in Nutrition Surveys." The Lancet 1942 II, 753.

Yudkin, J. and Jenkins, G.N. (1943) "Vitamins and Physiological function." British Medical Journal 1943 II, 265.

Yudkin, J. and Ferguson, A. (1943), "A Critique of the Bishop Harman Test for. Night Vision" British Medical Journal 1943 I, 633.

Yudkin, J. Robertson. G.W., and Yudkin, S. (1943) "Vitamin A and Dark Adaptation" The Lancet 1943 II, 10.

Yudkin, J. and McKenzie, J.C. (1964a) Changing Food Habits Macgibbon and Kee, London.

Yudkin, J. and McKenzie, J.C. (1964b) "Conspectus" in Yudkin and McKenzie (1964a) 135 - 44.

Yudkin, J., Edelman, J., Hough, L. (eds) (1971) Sugar: Chemical, Biological and Nutritional Aspects of Sucrose Butterworths, London.

Yudkin, J. and Akinyanju, P.A. (1967) "Effects of Dietary Carbohydrates on the Serum Lipids of the Rat" Proceedings of the Nutrition Society 26, xxxi.

Yudkin, J., Al-Nagdy, Sohair, and Miller, D.S. (1970) "Changes in the Body Composition and Metabolism Induced by Sucrose in the Rat" Nutrition and Metabolism 12, 193.

Yudkin, J., Bruckdorfer, K.R., and Kang, S.S. (1971) "The

Hyperlipidaemic Effect of Sucrose in Male and Female Rats"
Proceedings of the Nutrition Society 31, 11A.

Yudkin, J., Bruckdorfer, K.R., and Kahn, I.H. (1972) "Fatty Acid Synthetase Activity in the Liver and Adipose Tissue of Rats fed with various Carbohydrates" Biochemical Journal 129, 439.

Zaleski, S. (1975) Vitamins and their addition to food: a study of certain aspects of nutritional science, government and industry in Britain. MSc thesis Victoria University of Manchester.